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THE PRACTITIONER OF THE FUTURE

FRANK BILLINGS LECTURE

JAMES B. HERRICK, M.D.

CHICAGO

Whenever problems of medicine are considered there emerge from the discussion two common factors, the patient and the doctor. This is true whether the problem is that of general practice, state medicine, cost of medical care, contract practice, specialism, health insurance or what not. May it not be assumed that for years to come, perhaps always, there will be disease, and therefore patients and physicians, the duty of the latter to ward off disease when possible, to recognize and treat it if it comes, and to ameliorate the evil it causes if a cure cannot be wrought?

He would be rash indeed who would venture to predict what will be the exact status of medicine or the relation between physician and patient a century from now, yes, even a decade ahead. Toppling thrones, scrapped constitutions, unsettled economic conditions, hostile industrial and social groups, angry nations brandishing loaded weapons, all these things not alone upset the world of the present but threaten the tranquillity and stability of the future. Disturbing influences have penetrated into every, even the humblest, walk of life, so that we have a new disorderly literature, a new painting, a new music, a new religion. It need excite no wonder then that medicine has been profoundly affected. In fact, medicine today is in a parlous state of storm and stress.

This applies with special pertinence to the general practitioner. In the last few decades he has had a hard time of it; the family doctor has nearly, or quite, disappeared. Everything seemed to conspire against him. A huge volume of knowledge—bacteriology, x-rays, biochemistry, instruments of precision—suddenly poured in on him and all but overwhelmed him; he was unable to keep up with and to apply this knowledge. Research after the German model became the fashionable fetish; our practitioner developed an inferiority complex perhaps as a reaction to the superiority complex of the all-time research and laboratory worker. He was mortified to learn that the medical school whose cherished diploma graced his office wall had been declared unfit and had disappeared. Specialism rapidly increased; again the doctor felt degraded, for he was but an ordinary, all-round man. Keen economic competition had to be faced from specialists, groups, hospitals, with the cards stacked against him, for his erstwhile patients could, without his help, get prompt and satisfactory service and at moderate fees through telephone, automobile, good roads, and financial aid from the public, or from philanthropic organizations that underwrote hospital and clinic deficits. To cap the climax, the world depression and the pinch of poverty! Well may the practitioner exclaim with the pamphleteer of the American Revolution: "These are the times that try men's souls."

Is it to be wondered at that the doctor is discouraged, that his inferiority complex has become more fixed, that he shows signs of a delusion of persecution, that he is in revolt against the old traditions and the threatened formulas of the new practice, that he is resentful and inclined to lay the blame for his debacle on others? He does not realize that his misfortune is in great measure due to uncontrollable forces of the times; that it is partly owing to the inability or failure of his profession early to recognize and adapt itself to the rapid and inevitable changes in social, industrial, economic and medical conditions. Also he does not see that he is clinging to an obsolete ideal, that of the family doctor of fifty or sixty years ago, for whose restoration he clamors. He is incensed at all who seem to be robbing him of any ancient rights and privileges of the doctor of the good old times. And, worst of all, he is blind to the fact that a partial explanation for his present unsatisfactory status lies in himself.

> The fault, dear Brutus, is not in our stars,
> But in ourselves, that we are underlings.

What are some of his shortcomings? What can be done about it all? This is the main theme of my address, from which I consciously omit a consideration of many important features that are live topics today; e. g., economics and social trends. If what I say seems simple, if I utter much that has been said before and speak freely in platitudes, my apologia is that familiarity with truth even though it may not breed contempt may yet breed forgetfulness. Some of these truths need repeating, lest we forget. And as to platitudes, is not John Morley right when he says "Commonplace, after all, is exactly what contains the truth that is indispensable?"

QUALIFICATIONS FOR SUCCESS

It must be admitted at the outset that we are not able, nor should we try, to restore the old type family doctor. We cannot do this either by resolution of advisory organizations or by edicts of legislative bodies. A new type is evolving. Time will be the active agent in his incarnation. He will not be, he cannot be, the know-all and do-all doctor of the past. This has been well expressed by another: "To the brilliant mind of half a century ago a working knowledge of all the departments of medicine was attainable. The general prac-

The fifth Frank Billings Lecture, read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

titioner, competent, efficient was a possibility. Today such a prodigy is impossible." The term general practitioner in its strict sense implies that the doctor practices at will in all fields. Not only will this not be possible as in the past, it will surely not be permitted. Much of modern surgery, obstetrics and applied medicine demands not only unusual knowledge but expert skill and judgment in the handling of instruments and remedial agents and in the interpretation of laboratory observations. These tasks will not be entrusted to the general practitioner unless he is specially qualified.

What are the qualifications for the success of an average practitioner of medicine, one who is neither the superpractitioner of unusual ability nor the one who is hopelessly of inferior grade? Can the doctor of the future meet these requirements? It is to be understood that in this discussion I am concerned only with the so-called general practitioner, not with the specialist, the research worker, the teacher, the medical author.

Whether a physician is to be successful depends in a measure on his native endowment and to some extent on chance. Some men are by nature or inheritance better equipped than others; they have an advantage in physique, mentality, personality, ability to get along with and manage people. While chance and opportunity usually play a relatively unimportant part, we know how illness in the doctor's family or financial loss may destroy hopes and lead to failure. In the long run, however, the factors that determine success are character, a capacity for hard work, knowledge of medical science, and the ability properly to apply this knowledge in the recognition and treatment of disease.

What we call character—integrity, sincerity, affability, knowledge of human nature, forcefulness—has a weighty influence in determining one's success.

It seems almost puerile to speak of hard work as an essential; every one admits its value. Yet over and over again we hear doctors bemoaning their fate while all they are doing is to sit around, Micawber-like, waiting for something to turn up. The successful rival is getting ahead, not through luck or influence but through work. He is hunting for something to do and finding it, in the library, laboratory, ward or patient's home. In the medical society he is not concerned so much with pulling wires or trying to unearth some ethical flaw in the conduct of his colleagues as in listening to the scientific program or, better still, taking part in it. I myself have never known a successful doctor who was not a hard worker. When I once asked Dr. Billings what was the important essential for success in practice he replied promptly "hard work." The same idea is set forth by Osler in his charming essay on The Master Word in Medicine.

A medical man must have knowledge of his subject. He acquires this knowledge through his teachers, the library, the medical journal, the medical society, the laboratory, the bedside, the morgue. He must look for the new in monographs and original articles. One case well studied at the bedside, with search of the literature, with critical examination of intra vitam or postmortem specimens, with experimental investigation of some of the points involved, with carefully written report, will do much to clarify the doctor's knowledge, may help clarify for some one else. It does more: it will lead to further study along cognate lines, will make him especially proficient in some particular phase of medicine. He learns the meaning of thoroughness. He is working according to the principle of majoring, as the expression is used in the literary and arts courses in the undergraduate school, a principle that should be more in vogue in medical schools and that should be sedulously followed by every practitioner throughout his whole career. An acute observer in another field—that of librarianship—has well expressed this thought: "The very fact of intensive study of a small topic keeps you in touch with methods and men, and is an admirable corrective to the scattering tendencies of our calling."[1] To spread oneself thin over all fields conduces to mediocrity. A mediocre doctor is a dangerous man in that he does not know his own limitations or the risks and limitations of operative procedures, of drug therapy, of special methods of laboratory and instrumental diagnosis. Mastery of a few subjects by concentrated study means greater efficiency in every respect. *Non multa sed multum* is as true today as when uttered by Pliny or repeated by Roger Ascham. He must get away from the standard textbook style of study, learn how to dig out knowledge for himself, how to evaluate what has been written or spoken. He must lose what has been called the deep and rather pathetic respect for the printed word. He must learn how to think and how to decide for himself.

But the possessor of knowledge, even though it is accurate and encyclopedic, is not necessarily a good practitioner. Such a one must be able properly to use this knowledge, must know the art of medicine. This is a truism, stressed again and again by writers. Yet many a physician wonders why after years of study he is a failure as a practitioner. The reason may go back to the man's choice of a vocation. Some men are not medically minded. They are not fitted and cannot be made fitted for practice, just as some individuals cannot be made into good artists or good cabinet makers. Parents, school advisers and medical school examiners are at times to blame for encouraging or permitting a young man to go into or continue in the study of medicine when his bent and qualifications manifestly point in other directions—toward business, journalism, botany, engineering.

RESEARCH VIRSUS PRACTICE

There are those who think that success as a practitioner will come only if much time is devoted in undergraduate and later years to research. There is a strange fascination about research. As Zinsser[2] has said, "there has developed a curious halo about research which has exalted it above other and, in the absence of talent, more useful and less expensive methods of occupying time." There should be no quarrel with research per se. There is no higher type of work. It is the activating, catalyzing agent in the science of medicine. Without laboratory experimental research, medical science will stagnate and the art of medicine will revert to its old status of empiricism. Yet many research men or, should I say, many men who are working in research laboratories or wards, become poor practitioners. Is this in spite of research or because of it? Some of these men when they start to practice are unable to get down to the level of the everyday problems of the sickroom. They are visionary, with the eyes accommodated for distance; they fail to recognize a clinical fact when they meet it face to face or even when they stumble over it. They detour around the fact, get off the track. And the pathos of it all is

1. Bishop, W. W.: The Backs of Books, Baltimore, Williams & Wilkins Company, 1926, p. 11.
2. Zinsser, Hans: Science **74**: 397 (Oct. 23) 1931.

that they don't know they have lost their way. Some of them have a mania for experimentation, they toy with tentative diagnoses, they try new remedial agents that are a priori unsuitable or even dangerous. They are not only inefficient as practical physicians, they are at times a menace to the patient, who after all should not be regarded solely as an experimental animal. Surely research is not the sine qua non in the making of a clinician. The spirit and the methods of research? The ability to reason logically? The necessity for control? Emphatically yes. Compulsory research for all? No!

Conversely, the man whose bent and training are in clinical fields does not suddenly become a real investigator because he publishes an article, based on the observations in the hospital ward of himself, his assistants or technicians, even though the article is profusely illustrated with elaborate graphs and tables. Nor does he suddenly become a research man because he spends a few hours a week in a laboratory with test tubes and guinea-pigs. To go through the mechanical and technical procedures according to the directions of the professor, the real investigator whose originality lays out the problem and whose genius guides the investigation, is not a waste of time perhaps, for it may teach something of method; but it does not make a research man out of a practitioner who is lacking in the talent to which Zinsser refers. Good investigators have been spoiled by trying to make practitioners of them. Not a few practitioners have had their heads turned by fancying themselves research workers.

Medical research and practice are two different things. They differ in qualifications of workers, in objectives and in methods. The aim of research, the term being used in its stricter sense, is to advance knowledge by discovery of the new. Practice is the application of knowledge already known. Pure research has often had as by-products results that have been immediately utilizable in the art as contrasted with the science of medicine. Not all the results of observation and investigation by clinicians have been of the so-called practical character. Not a few have had as by-products facts that have had a direct bearing on a better understanding of principles that underlie medicine and cognate sciences. Clinical research, what Sir Thomas Lewis [3] calls progressive medicine, in appropriate institutions or hospitals—such as the Rockefeller Institute—by specially gifted and trained men, who have abundant leisure and suitable equipment, will continue to bring to light basic truths. Research is here a man's life work, his avocation. Investigation by practitioners—curative medicine of Sir Thomas—is in a sense avocational. I believe it will continue to be productive in the future, in spite of the view of Sir Thomas Lewis, expressed in his stimulating and analytical article, that the soil in this field of investigation is practically sterile, its fertility exhausted. There should surely be no heated antagonism between these two groups. There is no reason why, each retaining its autonomy, they should not be companions and allies.

To make it clear that, while not regarding research as essential to the preparation of a man for practice, I yet consider the spirit of research of paramount importance, may I quote with approval from John Livingston Lowes,[4] taking the liberty of substituting the words "practice" and "practitioner" for "teaching" and "teacher?" He says: "The thing is that the spirit of one's expeditions, minor exploits though they may be, into the territory of the unexplored will permeate one's whole attitude toward the body of knowledge handed down from the explorers and the builders of the past. And it will pervade and vitalize one's practice. It is quite on the cards that the results of our personal excursions may never directly enter that practice at all. It is the attitude of mind which they stimulate that is the vital thing. What you know and don't practice permeates and fecundates what you practice." It seems to me that he has aptly expressed an important principle in medicine. Every question of diagnosis is for the clinician a research problem. Unless the physician is inspired by the activating curiosity to know, to find out by close observation, by comparison with his own experience and that of others, by use of laboratory aids or by experiment, he is an inefficient practitioner, nonprogressive, and doomed to failure.

INDIVIDUALISM IN PRACTICE

I wish to speak of the value of individualism as it applies to the practicing physician, using the term not in a technical sense as referring to a school of philosophy opposed to collectivism but to indicate that which makes one man differ from another, his inherent peculiarity, his individuality, with also an element of independence.

There is today much overstandardization in education as well as in business, politics, social customs. From our schools there is turned out as product a mass of units almost uniformly alike, with the individual ruggedness and earmarks of personal identification worn off. One might think that when a physician escapes from the rigid curriculum of his professional school and enters on his vocation he would be himself. Yet often this is not true. He slips into his place in society and acts as though his job were to keep in line following the rules of the well beaten road, not even stopping to read the signs at the crossroads—simply following as one of the hurrying crowd. Such a course means repression of individuality, the dwarfing of self, the stifling of independent thinking, the loss of initiative and opportunity for constructive leadership, and of that which goes to make life "individual, elastic, thrilling."

The danger, of course, is that in giving free rein to individuality he may go so far as to become not only a radical but a crank. If he so acts as to harm his neighbor, the laws established by society will penalize him. If he violates the rules of right conduct that his colleagues have declared are based on principles of fairness to one another and to those who are ill, he is ostracized by his brother practitioners and perhaps by the community. In other words, as an active member of a learned profession and of society, he must play the game according to certain rules. And that game, the practice of medicine, is not solitaire. We must assume therefore that our doctor is not an extremist.

Take a few examples—perhaps trivial—of what is meant by individualism in practice. Timid young physicians often try to model themselves after some successful physician of outstanding ability. The chances are that, instead of acquiring the solid fundamentals and lofty ideals of their doctor hero, they imitate only externals, acquiring merely mannerisms. Henry Adams recognized this fact when he once wrote to his brother Charles "For God's sake let us go our ways and not

3. Lewis, Sir Thomas: Observations on Research in Medicine: Its Position and Its Needs, Brit. M. J. 1: 479-483 (March 15) 1930.
4. Lowes, J. L.: Teaching and the Spirit of Research, American Scholar, January 1933.

try to be like each other." Why should an experienced doctor always have to follow the routine path in arriving at a diagnosis—family history, past history, present complaint? Why not occasionally take a short cut to diagnosis? Not always safe but allowable if, in the vernacular, one can get away with it. Once as an intern I marveled at the accuracy and rapidity of Dr. Christian Fenger's diagnosis of a particular case. He was in a hurry. Ignoring my carefully written history, he pulled down the bed clothes, gave two or three prods in the right iliac region and curtly announced "osteosarcoma of the ilium; inoperable" and walked away. Much learning, wide experience, quick observation, enabled him in sixty seconds to declare a correct diagnosis, prognosis, treatment. This dramatic quick-on-the-trigger work is often effective but is dangerous. Finer and essential diagnostic differences may be brought out only by painstaking examination. Yet the latter method is not without its element of risk. The overcareful man by methods that might be called finicky may permit his first opinion based on plain outstanding facts to be shaken. Some minor point in diagnosis does not fit, its importance is magnified, he hesitates, repeats tests, his conclusions become hazy, perhaps valuable time is lost with serious consequences. In diagnosis judgment, experience, wisdom are at a premium. The physician must individualize and not robot-like follow some ironclad rule.

Why always the stereotyped manner of making a professional visit, which often involves an air of artificiality and unnatural behavior that may well breed lack of confidence on the part of the patient? Why should there be such a binding custom as to the way a doctor tells the patient of the nature of his illness, such stilted formalities as are still occasionally seen at consultations between physicians, or such arbitrary rules as to fees and manner of presenting bills for services? It is well to be reminded once in a while that what is referred to as our Code of Ethics is properly called The Principles of Ethics. It is not a code of laws or rules.

There should be more of individuality and less routine in the examination of patients. Some patients need a most thorough examination, perhaps with a prolonged hospital study. Extensive laboratory examinations may be necessary. But, to use extreme illustrations, the patient who goes to the general practitioner or the specialist with a cinder in the eye or an acute diarrhea need not be subjected to an expensive and time-consuming complete examination. Mackenzie cleverly said that if a man goes to a garage because of a punctured tire he resents being asked to pay for having his car thoroughly overhauled and put in repair. The individual physician must be qualified, and therefore permitted, to exercise judgment as to how much is to be done. Even in making periodic examinations, roentgenograms and electrocardiograms may not be necessary every time. The doctor may by these omissions occasionally overlook some hidden disease. On the other hand, the complete examination with its disclosure of numerous inconsequential deviations from the perfectly normal may upset the morale of the patient and start him on a hopeless career of self-centered health introspection, a type with which we are all too familiar. Routine periodic examinations, unless most judiciously made by one who not only knows medicine but knows a good deal of human nature as well, may easily lead, as Allbutt said, to an epidemic of fidgets.

A few months ago a patient said to me as I started to make my examination: "I hope you'll not be like the others; I want somebody who will examine me more and the x-ray films less." Not a bad text for a sermon: "Examine the patient more, the films less." The eye, ear, hand of the physician will often reveal more as to the nature of an illness than will the chemistry of the blood, the x-ray film or the electrocardiogram. One frequently learns as much from the way the patient tells his story as from what he tells. One may learn even from what he does not tell; i. e., from what he is evidently concealing. The physician is to recognize that no one of these methods is infallible. Just as the history may be unreliable, the physical examination faulty, so the x-ray technic may be poor, the laboratory test may be only approximately accurate. The eye looking at a film or a terminal laboratory color reaction or at a cell in a high power field may err as may the eye, ear or hand of the clinician. In other words, instruments and methods of precision are not infallibly precise.

Some of us who are older underestimate the importance, or the necessity, even the finality at times, of new instrumental and laboratory tests. But we may still claim a place for the old fashioned history, still a place for the stethoscope. A lesion found by the use of the x-rays may not be the one, as the history would show, that is causing symptoms. The man with a gallstone plainly visible in the film may be suffering from angina pectoris, which the instrument is powerless to disclose. The stone may be quiet, the coronary disease active. The x-rays cannot show a pericardial or pleural friction or a few apical râles that may point suspiciously toward tuberculosis.

I feel, further, that too implicit reliance on laboratory examinations may cause sound clinical judgment to shrivel up from disuse. Besides, unless there is extreme watchfulness the laboratory, as Peabody said of the hospital, may develop the impersonal in the doctor at the expense of the personal. The true physician must possess a dual personality, the scientific toward disease, the human and humane toward the patient. Fortunate is he who has these two ingredients in proper proportions. We may recall that Gibbon was glad he gave up the rigid demonstrations of mathematics before his mind had been hardened. And Jebb[5] recognized the danger that specialism—the overscientific attitude of mind—may destroy such things as humanism and morality.

How are physicians to be so trained that they may become skilled in reaching logical conclusions and wise in judgment as to what to do? The physician learns by study, he becomes proficient by experience. He profits by his own mistakes and those of others. The patient, be he alive or dead, is the most valuable textbook for the undergraduate student and the graduate doctor. "Practitioners are made at the bedside," said Allbutt. "Outpatient departments and the wards are the best clinical laboratories for the future practitioner" says Dean C. F. Martin of McGill. "Pathology is the mistress of us all," wrote Neusser. "To study the phenomena of disease without books," said Osler, "is to sail an uncharted sea, while to study books without patients is not to go to sea at all."

So I make a plea that the physician retain his individuality, believing that thus his life will be fuller, happier and more fruitful.

5. Jebb: Humanism in Education, Romanes Lectures, 1899.

NEED OF PERSONAL EFFORT

Are we to judge from the shortcomings of many of our practitioners of today that the outlook is discouraging? Not at all. There are signs of a reawakening on the part of the profession and of society at large to the important part to be played by the family doctor. There are many difficulties; but, as Dr. Thayer told us two years ago, these will settle themselves in time, for at heart all agencies are working toward the same end, the public good. Our lower schools, universities and professional schools are seriously concerned with what is the best preparatory course for the doctor. How may fewer but better doctors be trained? What nonessentials may with advantage be omitted? They are considering whether it is always wise to bunch prospective investigators, specialists and practitioners and to teach all in the same standardized manner. How may the necessary knowledge be learned, how may it be systematized so as to make it available for use? Some physicians are beginning to question whether some of the time spent in giving to the public a pseudo-education in medicine by popular lectures, radio talks, magazine articles may not be more profitably spent in educating themselves. Will not the physician who is competent gain the confidence of the public and serve the public more by what he does than by what he says? If good and efficient service is rendered by the ordinary practitioner as an individual or as a member of a group there will be fewer quacks, fewer cults, fewer semicharitable organizations supported, or even run, by philanthropically minded laymen or recalcitrant physicians.

George Vincent several years ago stated that three fourths of the population of this country were treated by general practitioners who have limited appliances, little or no specialization of skill and slight relation to medical services organized in hospitals, dispensaries and clinics. This condition, granting the correctness of Dr. Vincent's figures, has already materially improved. There is less inadequate knowledge and less faulty application than there was. The graduate of today, while he may know relatively less than the doctor of fifty years ago is, absolutely, far better informed than his predecessor. The practitioner realizes that he must know still more. He is eager to learn. To use the slang expression, doctors eat up medical meetings. They flock to the section meetings of the American Medical Association, they crowd its marvelous scientific exhibits. They swarm to national and district meetings whether of general or special character. All over the country, clinical weeks and postgraduate courses are arranged with lectures and demonstrations; and the doctors are there. These facts are significant. Doctors go because they feel the need and because they get something out of these meetings of various kinds. If one were to criticize, it would be that the doctor is often in too much of a hurry to get ahead. He is too much concerned with learning facts and technic that may be immediately applied in practice. Krehl[6] laments that the German practitioner of today is too much in a hurry, too concerned with questions of economics, too neglectful of the fundamental sciences that widen his horizon and increase his usefulness. The American doctor is too willing to be taught by others. He cannot learn in this way alone any more than he could in his undergraduate days learn by the didactic lecture without laboratory and ward training. Our doctors should do more themselves. They must learn to walk alone. The hard work in the local society in order to be most effective should be done more by members and not so much by invited guests. The status of the practitioner will be determined largely by what he himself does rather than by what is done for him by others. What he gets out of practice will be in proportion to what he puts in.

A result of this personal effort on the part of the doctor will be that he will become more self confident, will lose some of his inferiority complex. His patients will sense this and go to him as of old for advice or for treatment. He will dare of himself to test a knee jerk, to assess at its real value a heart murmur, even to tell whether tonsils should come out or stay. He may possibly be so thorough as to make a rectal examination and courageous enough to pass judgment on the results, thus depriving the consultant of one of his cherished prerogatives and most fruitful sources of income. In fact, he may reach a state where he will begin to wonder what and why is a specialist, what are his qualifications? He may wonder why there should be antagonism between specialists and practitioners, between research and practice. Why not cooperation? For specialism and research are necessities and have come to stay. And so has the practitioner; but only when, as, and if, he is qualified. Nay, the doctor may go further. He may wonder why he should not be a specialist of a new type, a practitioner-specialist whose functions Dr. C. G. Jennings[7] prophetically declares will be "(1) personal and household preventive medicine; (2) periodic medical examinations; (3) emergency first aid medicine—the diagnosis and treatment of acute and chronic disease in its incipiency." He thus becomes a sort of "visiting internist," perhaps the outpatient visiting doctor of a group, the liaison officer between the home and the hospital, between the home and the consulting room of the specialist. And this function will be his whether he is practicing as an individual or as a member of a clinic or is fitted somewhere into the complicated mechanism of what seems to be impending—over-socialized, or even state, medicine.

Has the doctor the qualifications of character and willingness to work? I am ready to match the medical profession as a whole against any other profession or trade as to character of its members, their industry, their lofty ideals, their fruitful self-forgetful service to humanity.

Yes, there will surely develop in the future—he is already well on his way—and largely through his own efforts a competent practitioner, who with integrity of character, with ideals of medicine as a profession and not a trade, with mind well stored with knowledge, with skill to apply this knowledge in a large proportion of cases of disease, with consciousness of his limitations, with readiness and ability to advise when and where expert help may be obtained, with good judgment and keen powers of observation sharpened by experience at the bedside and at the autopsy table, is worthy to be the family doctor or adviser, with all the traditional privileges and rewards that came from the personal relation of the old time doctor with the family—esteem and high standing in the community, the confidence and affection of his patients.

122 South Michigan Avenue.

6. von Krehl, Ludolf: Deutsche med. Wchnschr. **60**: 1 (Jan. 5) 1934.

7. Jennings, C. G.: Ann. Clin. Med. **4**: 773 (April) 1926.

FACTORS THAT INFLUENCE RHEUMATIC DISEASE IN CHILDREN

BASED ON A STUDY OF 1,200 RHEUMATIC CHILDREN

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It is rather infrequent for rheumatism to attack a child with well defined uniform symptoms that completely disappear after a definite period of illness. The clinical condition termed rheumatism is more likely to be insidious in its onset and to produce symptoms that may be mild or severe, of short or long duration, which make it difficult and impossible for the physician to prophesy accurately what the future has in store for a child once stigmatized with rheumatism.

Recurrences of the same type or different manifestations of rheumatism frequently occur. They may not be serious but are likely to cause some disability. If the heart is involved, the initial or the recurrent attacks assume a real menace to the child.

Until the specific cause of rheumatism is known and the constitutional susceptibility of the human host is understood, one can profitably study the factors that may be associated with the primary and recurrent manifestations of this disease in children. An analysis of these factors may show that they bear some relationship to the so-called rheumatic state.

No longer can one limit a discussion of rheumatism to such children who present the well defined symptoms of rheumatic fever, chorea and heart disease. The rheumatic child may show numerous other symptoms of great significance that cannot be grouped in this triad of well recognized symptoms. Pallor, fatigue, anorexia, epistaxis, vague pains and the like frequently are the only evidences of a rheumatic infection in a child. It cannot be stated positively that children presenting one or more of these complaints at a single period are stigmatized with rheumatism. Similar complaints may be associated with some other disease in some instances. The progress of their development may determine their significance. In this study the symptoms assumed to be associated with the rheumatic child have been listed and an effort has been made to detect the exciting factors that may or may not have influenced the return or the prolongation of the rheumatic complaints. Especial stress has been placed on the infections preceding the rheumatic symptoms.

A statistical analysis of the various manifestations noted in more than 1,200 rheumatic children reveals a variety of clinical symptoms. Some children have six or more rheumatic symptoms, while others show only a few definite complaints. Such rheumatic manifestations as pancarditis and rheumatic nodules denote a serious form of rheumatic infection, while the complaints of tonsillitis, pallor and anorexia may be an indication of less serious rheumatic infection.

For convenience, the rheumatic manifestations noted in these children have been grouped as major or as minor manifestations. Both mild and severe manifestations may exist in the same child.

In chart 1 it is noted that pancarditis, a term used to cover the various anatomic lesions of the heart that might be found in rheumatic children, is the most common major complaint in children stigmatized with rheumatic disease. In the course of the rheumatic infection the heart became involved in 64 per cent of the 1,240 children studied. Not all these children showed evidence of cardiac involvement during the initial attack of rheumatic disease. In a small number the signs of cardiac disease were not noted until after the first or second recurrence of the disease. The high incidence of pancarditis stresses the seriousness of rheumatic disease in children. This rate is no higher than the incidence noted in other clinics, notably those in England.

Acute arthritis or rheumatic fever was the second most common rheumatic manifestation. Rheumatic fever in children is usually accompanied by a fever and painful joints. This type of arthritis, which is termed severe arthritis, occurred in 39 per cent of the rheumatic group. The mild form of acute arthritis not associated with swelling and visible inflammation is termed joint pains. About 32 per cent of the children had complained of joint pains. Combining the mild and the severe forms of acute arthritis in these 1,240 children, it developed that in 71 per cent of the rheumatic children the joints were involved. This is in accord with the accepted view; namely, that arthritis is the manifestation of rheumatism which is looked on as the most characteristic.

Assuming that chorea is in the vast majority of cases due to a rheumatic infection, it was found to occur in 29 per cent of the group. The age and the seasonal incidence were practically identical with that noted in arthritis. In this series, as in other reported series, the disease was found more frequently in girls. Among the 344 children who had chorea, 56 per cent occurred in girls and 44 per cent in boys. Chorea and arthritis

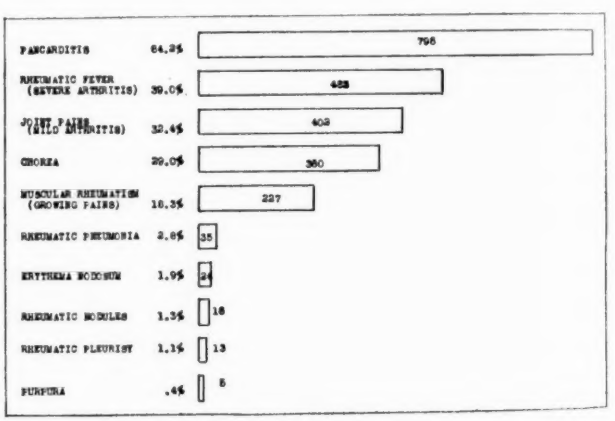

Chart 1.—Incidence of the major rheumatic manifestations in 1,240 rheumatic children.

occurred in the same individual at the same time in only a few instances. Chorea is not so frequently accompanied by disease of the heart as is arthritis.

Muscular rheumatism, or "growing pains," is a rheumatic manifestation subjected to much criticism. That such symptoms do occur in rheumatic individuals is now quite generally recognized. Recently Seham [1] has strengthened the contention that so-called growing pains are usually evidence of inflammatory reaction in the muscles. He feels, however, that "growing pains" is a misnomer and recommends the term muscular rheumatism. In this group 18 per cent of the children

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Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Seham, Max, and Hilbert, Edith: Muscular Rheumatism in Childhood, Am. J. Dis. Child. **46**: 826 (Oct.) 1933.

gave evidence of chronic pains in the muscles. These children generally have a less severe type of rheumatic involvement and show a lower incidence of cardiac involvement.

The other major rheumatic manifestations occurred infrequently in this series. Rheumatic pneumonia and rheumatic pleurisy are perhaps not always recognized

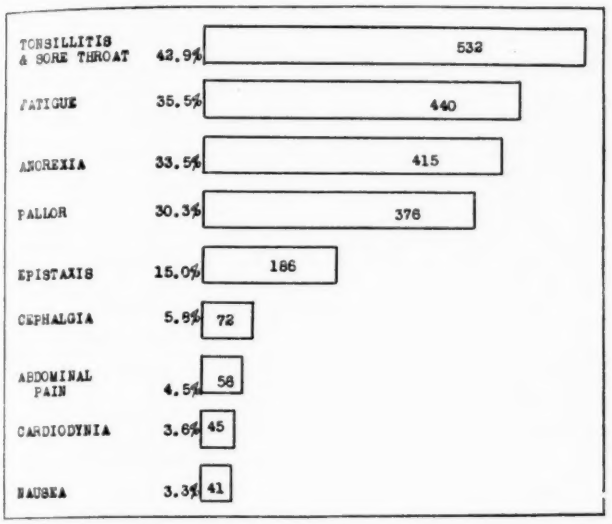

Chart 2.—Incidence of the minor rheumatic manifestations in 1,240 rheumatic children.

and for that reason the incidence is low. Erythema nodosum was diagnosed in twenty-four cases, but it is quite likely that at least one half of this number may have been of tuberculous origin. Rheumatic nodules and purpura were found only a few times. Findlay [2] describes the subcutaneous nodule as the least frequent manifestation of the infection. In spite of that statement it was found in 10 per cent of his 701 cases, while in Rochester it was found in only 1.3 per cent of 1,240 rheumatic children. It is generally believed that this manifestation varies in different regions and this may account for the low incidence in this group.

There can be very little doubt of the relationship of these major manifestations to the disease termed rheumatism. When one attempts to enumerate the milder manifestations noted in chart 2 as symptoms recognized in these definitely diagnosed rheumatic children, it became evident that no one of these manifestations justifies a diagnosis of rheumatism. When, however, they occur in conjunction with some of the major manifestations or a number of the mild ones occur in the same child without the classic rheumatic manifestations, their presence has considerable significance.

Tonsillitis or sore throat, depending on whether the tonsils were in or out at the onset of the rheumatic infection, existed immediately preceding an attack of arthritis, chorea or endocarditis in 43 per cent of the cases. It might be said that the throat infection was the first evidence of rheumatic disease, though it was not termed rheumatic in nature until other manifestations were evident. The acute throat infection noted in these rheumatic children did not differ from throat infections in children in whom rheumatic disease does not develop. It does, however, show the potential danger of tonsillitis.

2. Findlay, Leonard: Rheumatic Infections in Childhood, New York, William Wood & Co., 1932.

About one third of all the rheumatic children showed early evidence of fatigue, anorexia and pallor. Similar complaints are noted in other infections, notably in tuberculosis; but if no evidence of tuberculosis is found either by physical examination, by the tuberculin test or by roentgen examination of the chest, one is justified in suspecting an early rheumatic infection when these complaints exist.

Various observers have mentioned the frequency of epistaxis in rheumatic disease. In this series it occurred in 15 per cent of the 1,240 children. Other complaints, such as cephalalgia, abdominal pain, cardiodynia and nausea, were noted in a relatively small percentage of the children.

As long as the diagnosis of rheumatic infection in childhood is made only on the presence of one or more of the major manifestations, the real significance of these minor manifestations must remain uncertain. It seems more than probable, however, that any one or any group of these minor complaints may be evidence of a rheumatic infection, even in the absence of the well known serious manifestations.

Rheumatic disease, though most common in later childhood, does occur in early childhood. In a series of 1,126 rheumatic children, definite evidence of rheumatic disease was found in 33 children under 2 years of age. Various authors report only rare cases under 3 years of age. The age incidence may vary in different parts of the world. After 3 years of age the disease becomes more common, as noted in chart 3, and gradually increases in frequency until the tenth year,

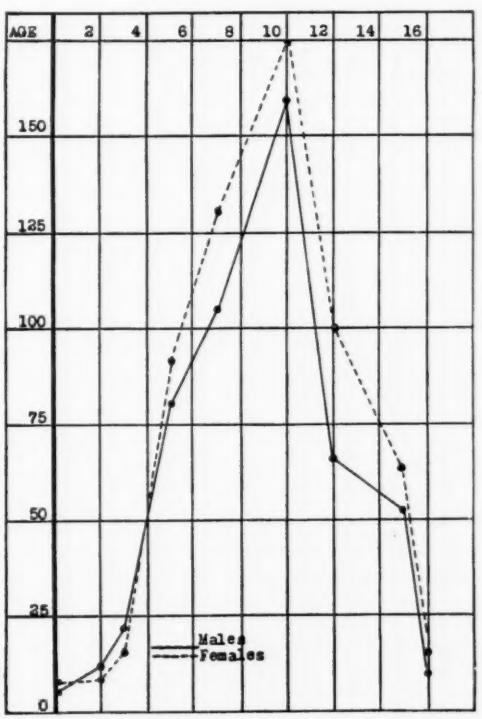

Chart 3.—Age incidence of first evidence of rheumatic disease in 1,126 children.

which represented the optimal age in this series for the first evidence of rheumatic disease. The incidence declines rapidly after the tenth year and at the fifteenth year is as infrequent as in the early years of childhood.

Findlay,[2] in a study of 321 children with arthritis, found that 7 years represented the most common age

for boys and 10 years for girls. A comparison of the British figures with the Rochester group showed that in England 52 per cent occurred during the seventh to the tenth year, while in this series 50 per cent occurred between the sixth and the tenth year.

Rheumatic manifestations are more frequent in girls than in boys. Out of 1,126 children under observation, 612, or 54 per cent, were girls and 46 per cent were boys. A similar distribution was reported in England.[2] A preponderance of girls was reported by Wilson, Lingg and Croxford[3] in a total of 500 children with rheumatic heart disease (60 per cent girls and 40 per cent boys). There is no known reason why the disease is more common in girls, unless it is due to the preponderance of chorea in girls.

It has been generally assumed that rheumatic infection is more prevalent in the winter months. It undoubtedly is influenced by season, though it occurs at any time of the year. As noted in chart 4 the disease in Rochester is more prevalent in the late winter and spring months, which has been the experience of other observers in the United States. In England it is most prevalent during the autumn and winter months. Everywhere it is least common during the summer. This seasonal behavior suggests the possibility of a predilection for certain geographic areas, and such is known to be the case.

Numerous investigations have been made on the social distribution of the disease. Great stress has been placed on the fact that it is primarily a disease of the

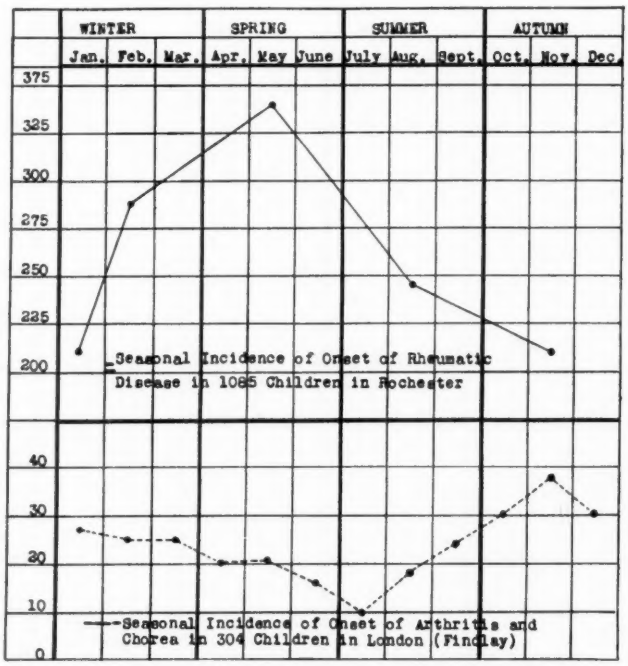

Chart 4.—Seasonal incidence of rheumatic disease in Rochester and of arthritis and chorea in London.

better class poor families and that it is rarely seen in children among really well-to-do families. Contrary to these statements, many cases listed in this group occurred in well-to-do families and the great majority occurred in the well-to-do laboring classes. The factor of social standing is probably of less importance than the hygienic conditions surrounding these children. In this series of more than 1,200 rheumatic children, the Italians contributed the largest number. Poor housing, notably dampness, was noted in many of these homes, but no definite conclusion could be arrived at as to the housing situation as a contributing factor to the etiology of rheumatism.

The initial rheumatic manifestation has considerable to do with the immediate outcome as well as with the course of this disease. Various combinations of rheumatic manifestations are listed. It will be noted in table 1 that the well defined clinical cases can be grouped under the four major headings into which most of the children with rheumatic disease can be placed. They are acute arthritis, including the children with rheumatic fever and joint pains, chorea, muscular rheumatism or growing pains, and primary rheumatic carditis that develops without any of the other recognized manifestations. Arthritis is the most common of the rheumatic manifestations, occurring in 61 per cent of the 1,181 children. Arthritis may occur alone as it did in 28 per cent of the children who had arthritis. In a small number of cases it occurred in conjunction with chorea. It is well known that acute arthritis is frequently associated with carditis. In 67 per cent of this Rochester group of children, some form of carditis developed with the initial attack of arthritis. The high incidence of carditis in this rheumatic group emphasizes the seriousness of acute arthritis in children.

TABLE 1.—*Frequency of the Initial Rheumatic Manifestations in 1,181 Children*

Acute arthritis			723 or 61%
Incidence of carditis	67%		
Acute arthritis alone		195	
Arthritis and chorea		44	
Arthritis and carditis		422	
Arthritis, chorea and carditis		62	
Chorea			326 or 28%
Incidence of carditis	58%		
Chorea alone		94	
Chorea and carditis		126	
Chorea and arthritis		44	
Chorea, arthritis and carditis		62	
Muscular rheumatism (growing pains)			98 or 8%
Incidence of carditis	43%		
Muscular rheumatism alone		56	
Muscular rheumatism and carditis		42	
Rheumatic carditis (primary)			140 or 12%
Incidence of carditis	100%		

Chorea either alone or in combination with arthritis occurred in 28 per cent of the 1,181 children. The incidence of carditis in children who had chorea was somewhat lower than in those who had arthritis. However, associated with or following the initial attack of chorea, evidence of cardiac involvement developed in 58 per cent. The mortality rate among the children with chorea and with carditis was considerably lower than among the children who had arthritis and carditis. Muscular rheumatism, because of its vagueness and often mildness, is not easily classified. In this series only undoubted cases of muscular rheumatism or "growing pains" have been included. Only 8 per cent of the entire group were complaining of chronic muscular pains alone, but even in this group carditis was evident in 43 per cent of the children. Undoubtedly, if more cases of this less definite rheumatic manifestation were included, the incidence of cardiac involvement would not be so great. It emphasizes the fact, however, that even mild rheumatic complaints may be the exciting cause of a rheumatic carditis. The mortality in the children with rheumatic carditis following muscular

3. Wilson, May G.; Lingg, Claire, and Croxford, Geneva: Tonsillectomy in Its Relation to the Prevention of Rheumatic Heart Disease, Am. Heart J. **4**: 197 (Dec.) 1928.

rheumatism was low as compared with those who had rheumatic carditis and arthritis.

The term carditis includes all the cases presenting myocarditis, endocarditis and pericarditis. It is used for convenience in discussing the cardiac complications in rheumatic disease. Though rheumatic carditis, as a rule, accompanies or follows an attack of arthritis or chorea, it may, and especially under the guise of endocarditis or pericarditis, be the first manifestation of the rheumatic carditis. Undoubtedly tonsillitis or some other infection may have preceded the cardiac involvement, but no clear history could be obtained in these children. The mortality in this group was about the same as in the group of carditis associated with arthritis.

Though the seriousness of the initial attack of a rheumatic manifestation depends on whether or not the heart is involved, the ultimate outcome is influenced by the factor of whether recurrences of the disease with the same or other manifestations are likely to occur.

In table 2, an analysis is reported of 564 children on whom follow up reports have been available. All these children have been followed for three years, a somewhat smaller number for five years and nearly 200 children for ten years or more.

The first three years after the initial attack was the period of greatest hazard for these rheumatic children. Though the fatality rate of 5 per cent is not high, it is responsible for more than one half of the children who die of their rheumatic infection during the ten year period following the initial manifestation. During the three years, 49 per cent of the children had one or more recrudescences of their symptoms. During the first three years the chances of a recurrence are somewhat greater when chorea exists than with arthritis.

TABLE 2.—*Outcome of Rheumatic Disease Based on a Follow-Up Study of 564 Children* *

Type of Complaint (Initial Attack)	End of 3 Years 564 Children			End of 5 Years 341 Children			End of 10 Years 180 Children		
	Died	Recurrence	No Recurrence	Died	Recurrence	No Recurrence	Died	Recurrence	No Recurrence
Acute arthritis (rheumatic fever)	0	52	50	1	25	32	0	9	13
Arthritis and chorea	0	4	11	0	2	8	0	0	1
Arthritis and carditis	23	135	105	4	65	71	10	20	22
Chorea	1	23	16	0	11	11	0	6	1
Chorea and carditis	0	41	25	0	21	13	0	7	1
Muscular rheumatism (growing pains)	0	10	9	0	6	9	0	2	4
Muscular rheumatism and carditis	1	3	9	0	2	7	0	1	4
Primary rheumatic carditis	6	8	32	0	4	14	0	0	1
Totals	5%	49%	46%	1%	40%	48%	6%	25%	26%

* Died and recurrence mean death or recurrence since the preceding period.

During the period from three to five years after the initial attack the mortality rate was considerably lower and the number of recurrences somewhat less than during the first three years. However, 40 per cent of the group were still having one or more recurrences.

From five to ten years following the initial attack, something over 5 per cent of the children who survived the five year period died. These fatalities were all in children who had a recurrent attack of arthritis with carditis. The number of children in whom recurrences developed dropped off perceptibly during this period, for only 25 per cent of the children had any recurrence from the fifth to the tenth year after the initial attack.

A review of these 564 rheumatic children reveals a mortality of 8.2 per cent during the ten years subsequent to the initial attack. Recurrent attacks developed in 49 per cent of the survivors during the first three years and again in 40 per cent during the next two years, while in the next five years only 25 per cent had evidence of any recurrence. It would appear that after five years has passed the prognosis for ultimate recovery and freedom from recurrences is definitely improved.

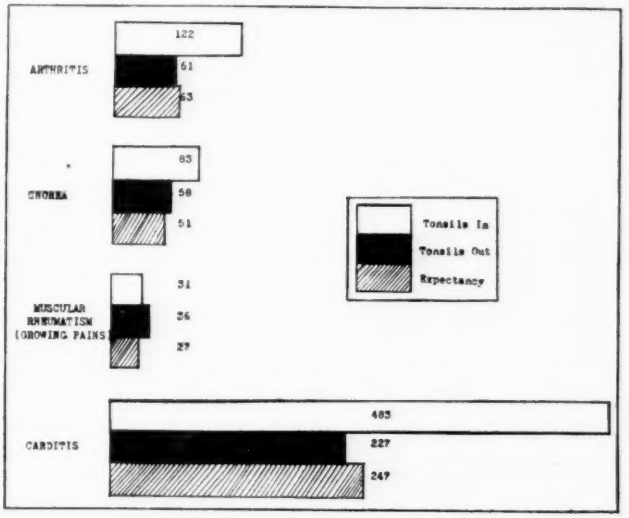

Chart 5.—The factor of tonsils present or absent at the initial attack of rheumatic infection in 1,101 children.

The tonsils hold a prominent place among the factors that may influence rheumatic infection in childhood. Some years ago it was assumed that infection in the tonsils was largely responsible for the subsequent manifestations of rheumatism. More recently several observers have shown that the removal of the tonsils following the initial attack of rheumatic fever or chorea did not safeguard the child against recurrences any more than when the tonsils were not removed. These divergent views have left considerable uncertainty in the minds of the physicians as to what course to take in the treatment of the tonsils in a rheumatic child. It is quite generally accepted that there is a relationship between an initial infection in the tonsils and a subsequent rheumatic manifestation. If this is true, there should be a lessened incidence of rheumatic disease in children whose tonsils have been removed. If the first evidence of rheumatic infection develops in children whose tonsils have been removed with the same frequency as in children whose tonsils are still present, no close relationship can be claimed between the tonsils and rheumatism in children. On the other hand, fewer instances of primary rheumatic infections in children whose tonsils have been removed suggests a relationship that may be important. The questions relating to the tonsils that should be answered are: Does the presence or absence of the tonsils influence the severity of the disease as reflected in the mortality rate? Does the presence or absence of the tonsils influence the likelihood of recurrences? An attempt has been made to answer these questions from a study of this group of rheumatic children. In a previous study I [4] have shown

4. Kaiser, A. D.: Children's Tonsils In or Out, Philadelphia, J. B. Lippincott Company, 1932.

that about one third more children, figured on a percentage basis, had their first attack of rheumatism when the tonsils were in than those who had been tonsillectomized. Familiar with the number of children in Rochester whose tonsils have been removed at various age levels, I was able to compute the expected incidence of rheumatic disease among tonsillectomized children in the community. In chart 5 the main manifestations of rheumatic disease are noted in the children whose tonsils were in at the time of the initial attack and in those in whom the tonsils had been removed prior to the initial attack. The expected incidence among the tonsillectomized children is also stated. The incidence of acute arthritis or rheumatic fever in the tonsillectomized children was nearly the same as the expected rate. Chorea was slightly more prevalent in the tonsillectomized children than was expected. The same situation was true with the manifestation termed muscular rheumatism or "growing pains." Rheumatic carditis, on the other hand, developed somewhat less frequently in tonsillectomized children than one could reasonably expect. Considering the entire group of 1,093 children, the presence or absence of tonsils made only a slight difference on the frequency of an attack of rheumatism. There was less than 10 per cent advantage for the tonsillectomized group.

TABLE 3.—*The Factor of Tonsils Present or Absent at the Initial Attack of Rheumatic Infection at Various Ages in 1,101 Children*

Rheumatic Manifestation	Cases	Tonsils In			Tonsils Out			Expected Number with Tonsils Out		
		2-5 Years	5-10 Years	10-15 Years	2-5 Years	5-10 Years	10-15 Years	2-5 Years	5-10 Years	10-15 Years
Arthritis	183	34	62	26	..	22	39	3	26	34
Chorea	141	7	56	20	1	29	28	1	26	24
Muscular rheumatism	67	5	13	13	..	16	20	1	9	17
Carditis	710	100	257	126	7	101	119	6	111	130
Totals	1,101	146	388	185	8	168	206	11	172	205

When, however, the various age groups were considered it was noted that in children under 10 years of age whose tonsils had been removed a rheumatic manifestation was somewhat less likely to develop, while after 10 years of age there was no appreciable difference in the incidence regardless of the absence or presence of tonsils.

TABLE 4.—*The Effect of the Tonsils on the Outcome of Rheumatic Infection in 597 Children*

Tonsils	Number	Died	One or More Recurrences	No Recurrence
Remained in	156	13%	46%	41%
Out at initial attack	187	7%	48%	45%
Out after inital attack	254	4%	44%	52%

The influence of the presence or absence of the tonsils on the mortality rate as well as the relationship to recurrences was recorded in 597 children. In almost comparable groups the mortality rate was 13 per cent among the children whose tonsils were in and 7 per cent among those whose tonsils were out at the time of the initial attack. This result suggests that the most serious type of rheumatic infection is more likely to occur in children whose tonsils are still present.

As to the effect of the presence or the absence of the tonsils on recurrences, the results in this study agree with the reports made by other observers. Recurrent attacks of rheumatism occurred as frequently in tonsillectomized children as in the untreated ones, at all ages. When the tonsils were removed after the initial attack, the percentage of recurrences was only slightly less than when the tonsils were not removed.

A more careful analysis of the relationship of the presence or absence of tonsils to the various rheumatic manifestations shows that rheumatic fever and rheumatic carditis are somewhat less likely to occur in the tonsillectomized children, while chorea and muscular rheumatism are slightly more prevalent in the tonsillectomized children. Since the mortality rate is greatest in the first group, there seems to be some advantage to the child to have the tonsils out in combating this disease.

In spite of the numerous efforts to associate a streptococcic infection with rheumatic disease, no conclusive evidence is yet available to make this relationship certain. The fact that tonsillitis, which is frequently of streptococcic origin, and scarlet fever frequently precede some rheumatic manifestations suggests that the individual has become sensitized to the streptococcus. Considerable support is given to this contention by skin testing rheumatic children with the hemolytic streptococcus nucleoprotein. Two hundred of these rheumatic children were tested with this nucleoprotein and, as noted in table 5, showed a high percentage of positive reactions. It was found that for the whole group 75 per cent gave a positive reaction, while in a similar test on a like group who did not show evidence of a rheumatic infection only 32 per cent gave a positive reaction. It was also observed that the degree of reaction was more marked in the rheumatic children.

TABLE 5.—*Cutaneous Reaction to Hemolytic Streptococcus Nucleoprotein in 200 Children with Definite Rheumatic Infection*

Age Groups	Number Tested	Number Positive	Number Negative	Per Cent Positive
1- 3 years	4	3	1	75
3- 5 years	5	4	1	80
5- 7 years	26	15	11	57.7
7-10 years	69	50	19	72.5
10-13 years	58	49	9	84.5
13-16 years	38	28	10	73.7
Totals	200	149	51	74.5

The seasonal incidence of rheumatic disease following closely the epidemics of sore throat and scarlet fever make it seem more than likely that the presence of streptococci in the individual is a factor in the causation of the initial or a recurrent attack of rheumatic disease.

It is a well known fact that a rheumatic infection is frequently preceded by some infection of the upper respiratory tract. In all the surveys made by careful observers there is agreement that frequent attacks of sore throat or tonsillitis are more common in rheumatic children than in so-called control or nonrheumatic children. The frequency of sore throat attacks prior to rheumatic symptoms varies from 28 per cent determined in Bertram's[6] studies to 77 per cent reported by Ingerman and Wilson.[7] An attempt was made in this study to determine the type of the preceding infec-

6. Bertram, Mary: Some Features of the Rheumatic Infection, Brit. M. J. **1**: 496 (March 14) 1925.

7. Ingerman, Eugenia, and Wilson, May G.: Rheumatism: Its Manifestations in Childhood Today, J. A. M. A. **82**: 759 (March 8) 1924.

tion and to note the course of the rheumatic disease. Infections of some type prior to the rheumatic manifestations were noted in 810 of the rheumatic children, and of this number 59 per cent gave a history of an attack of tonsillitis or sore throat. All types of rheumatic infection followed tonsillitis, but the more severe manifestations such as arthritis and endocarditis were more likely to follow than were chorea and muscular

TABLE 6.—*Incidence of the Preceding Infection in the Initial Attack of 810 Rheumatic Children*

Preceding Infection	Arthritis (Rheumatic Fever)	Chorea	Muscular Rheumatism (Growing Pains)	Carditis	Totals
Tonsillitis or sore throat	66%	38%	39%	61%	59%
Common cold	4%	12%	10%	8%	8%
Dental infection	15%	24%	32%	10%	13%
Scarlet fever	2%	3%	3%	9%	7%
Measles	1%	1%	....	1%	1%
Influenza	3%	1%	....	1%	2%
Sinusitis	6%	5%	8%	3%	4%
Otitis media	...	7%	5%	3%	2%
Cervical adenitis	1%	1%	....	1%	1%
Other	2%	8%	3%	3%	3%
Total cases	137	75	38	560	810

rheumatism. Tonsillitis was a preceding infection in 66 per cent of the cases of arthritis and in 37 per cent of the cases of chorea. Among the 560 children with carditis in whom a preceding infection was noted, 61 per cent gave a history of tonsillitis immediately preceding the initial attack of rheumatic disease. It is this group in which the highest mortality exists. When one notes the high mortality rate and the high percentage of recurrences in the rheumatic children whose initial infection was a sore throat, it becomes evident that tonsillitis may usher in the most serious type of rheumatic infection.

It has been impossible to tabulate the preceding infections in the recurrent attacks of rheumatic infections, but in a small number the same infections,

TABLE 7.—*Outcome of the Rheumatic Infection in 406 Children at the End of Five Years as Related to the Type of Infection Preceding the Initial Attack*

	Arthritis			Chorea			Muscular Rheumatism			Carditis		
Preceding Infection	Died	Recurrence	No Recurrence	Died	Recurrence	No Recurrence	Died	Recurrence	No Recurrence	Died	Recurrence	No Recurrence
Tonsillitis or sore throat	0	22	31	0	12	3	0	3	5	17	79	88
Common cold	0	4	1	0	2	3	0	1	0	4	7	13
Dental infection	0	6	6	0	4	1	0	3	3	4	13	16
Scarlet fever	0	0	2	0	1	0	0	0	0	2	14	16
Sinusitis	0	4	0	0	1	2	0	0	0	0	2	4
Otitis media	0	0	0	0	0	0	0	0	1	0	4	2

namely, tonsillitis, dental infections, common colds and scarlet fever, were noted in about the same frequency. McCulloch and Irvine-Jones [8] have carefully studied this relationship and have shown that an infection of the upper respiratory tract is quite likely to precede a recrudescence of the rheumatic process.

It appears that infections of the upper respiratory tract, notably pharyngitis and tonsillitis, are a very important factor in the development of rheumatic phenomena. In spite of attempts to give rheumatic children all the advantages of a good environment with a high standard of living, fresh attacks of rheumatism would develop. In most instances recrudescences occurred after an outbreak of some infection of the upper respiratory tract. Coburn [9] has shown in a study of the rheumatic children at the Pelham Home the significance of respiratory infections on the recrudescence of rheumatic manifestations.

The factors thus far discussed have an influence on the frequency and severity of a rheumatic infection. Undoubtedly there are other factors less clearly understood that may have even a greater influence on the development of this disease. Climatic conditions are thought to have an important bearing on the incidence of this disease. Statistical reports show the rarity of the disease in the tropics and the comparative freedom from symptoms of rheumatic children who are transported to the tropics. The reason for the clinical improvement while in the tropics is not clearly understood.

Another factor that is obviously of importance in determining who will have a rheumatic infection is known as a constitutional susceptibility.

Until the factor of susceptibility is better understood and more definite information is at hand on the etiology of this disease, the control of rheumatic disease will not be mastered.

SUMMARY

1. Rheumatic infection is a common complaint in certain sections of the country.

2. It occurs at all ages of childhood but most frequently between the ages of 8 and 10.

3. It occurs most frequently in Rochester during the late winter and spring months.

4. Rheumatic disease in children may manifest itself with mild manifestations such as sore throat, fatigue, anorexia and pallor.

5. No social or economic factors play any significant part in the control of this disease.

6. Rheumatic infection is essentially a chronic disease and tends to recur in more than 50 per cent of the cases.

7. Recurrences of the disease are much less likely to develop five years or more after the initial infection.

8. Rheumatic infection occurs slightly more often in children whose tonsils have not been removed at the time of the initial attack.

9. The mortality rate is nearly 50 per cent less in children whose tonsils had been removed at the time of the initial attack.

10. Recurrent attacks were not lessened in tonsillectomized children or in those who were tonsillectomized after the initial attack.

11. Hemolytic streptococcus nucleoprotein skin tests were positive in 75 per cent of the rheumatic children as compared to 32 per cent of nonrheumatic children.

12. Tonsillitis or sore throat was the preceding infection in 59 per cent of the rheumatic children.

13. The most severe cases of rheumatic infection followed attacks of tonsillitis and dental infections.

14. Respiratory infections are an important factor in causing recrudescences of the rheumatic phenomena.

15. One may assume the existence of some constitutional susceptibility to rheumatism, but no proof of it is available.

16 North Goodman Street.

8. McCulloch, Hugh, and Irvine-Jones, Edith: The Rôle of Infection in Rheumatic Children, Am. J. Dis. Child. **37**: 252 (Feb.) 1929.

9. Coburn, A. F.: The Factor of Infection in the Rheumatic State, Baltimore, Williams & Wilkins Company, 1931.

ABSTRACT OF DISCUSSION

DR. ALBERT J. BELL, Cincinnati: In this paper, rheumatism is referred to as the rheumatic state, which is the modern and broader conception of the disease. The author includes in this syndrome the minor manifestations, such as anorexia, epistaxis and muscular pains, together with the more classic symptoms of arthritis, heart disease and chorea. I myself have always objected to the term rheumatic fever, as it implies definitely a specific disease, which I am aware some believe but which has not been proved. The fever cannot always be demonstrated. Dr. Kaiser's observations have been similar to those previously made by others, notably the very prominent rôle which tonsillitis and infections of the upper respiratory tract play in the causation of rheumatic manifestations. He had likewise emphasized the disappointing results of tonsillectomy. I will limit my discussion to the removal of tonsils, to sore throat, to tonsillitis and to the operation in question. I have not seen satisfactory proof that the tonsils have been removed sufficiently early, that is, before the infection has spread to other tissues of the pharynx, nor have I seen statistics that give the ages of the children whose tonsils have been removed. Records of cases in which tonsillectomy has been performed around five years and their subsequent careers followed over a period of years would be desirable. All physicians are in agreement that tonsillitis and infections of the upper respiratory tract are the most frequent causes of rheumatic manifestations. While the operation of tonsillectomy has been very much abused and the results are unsatisfactory, I believe that it is still a very important measure of treatment; but it must be used intelligently and not performed merely because enlarged tonsils are present. The question of allergy and its relation to throat infections must be studied, as well as the relation of other lymphoid tissues in the throat, to infections in the upper respiratory tract. I cannot but feel that a clean throat will predispose less to infections of the upper respiratory tract, which all agree are the principal causes of rheumatic manifestations.

DR. JESSE R. GERSTLEY, Chicago: During the last seven years in studying rheumatism I have concentrated upon one of its supposed manifestations, chorea. At the end of seven years, 150 cases were summarized and forty-five taken as a cross section. Five of six patients with chorea, who had a true history of arthritis and had tonsils, developed endocarditis. There were no cases with a history of rheumatism and no tonsils. In nine questionable cases of rheumatism there were one questionable and four definite cases of endocarditis among those with tonsils. In those patients with a questionable history of rheumatism and no tonsils, only one developed endocarditis, and here the diagnosis was tentative—out of five. Eleven patients with no history of rheumatic infection are those whose tonsils were present. There were two with definite endocarditis and two with questionable endocarditis. In the largest number of patients with chorea, those with no history of rheumatism and no tonsils present, only one out of the fourteen developed endocarditis. Of course, observations of this sort must be repeated with a much larger series. I don't now whether this holds true for most cases. At any rate, judging from this series, I would conclude that tonsillectomy is a very important factor in preventing endocarditis in chorea. It also raises the question as to whether chorea is really a manifestation of rheumatic infection.

Laboratory Data and the Unaided Senses.—Too many practitioners accept the dicta of the laboratories as though they represented some magical contribution to the solution of a given case, whereas laboratory data are frequently of no more importance, and often of less significance, than are facts in the history or observations made on the patient with the unaided senses. It is essential that we should inculcate this view-point into our students and impress upon them the importance of treating laboratory data like any other form of information and of basing their conclusions regarding a given case of disease on a careful analysis of all the pertinent facts and on logical meditation of these facts.—Blumer, George: Some Discursive Remarks on Bedside Diagnosis, *Yale J. Biol. & Med.* **6**:571 (July) 1934.

DIABETIC CATARACT

INCIDENCE AND MORPHOLOGY IN 126 YOUNG DIABETIC PATIENTS

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Cataract is a well recognized complication of severe diabetes mellitus in young persons but is considered to be comparatively rare. It is believed by some to occur only in those with associated vascular disease. In its typical form diabetic cataract is described as developing in both eyes with great rapidity; that is, within a few hours or days. There is no evidence of a characteristic morphology; different observers describe subcapsular vacuoles, water slits, and various types of grayish white and iridescent subcapsular and cortical opacities; for example, reticulate, asbestos-like, punctate and flocculent. Also a saucer-like gray and opalescent posterior subcapsular opacity is described.

This study of the crystalline lenses in young diabetic subjects was undertaken in order to determine the incidence and morphology of cataracts in such patients. The report is founded on repeated detailed examinations, with the slit lamp microscope, of the lenses in 126 diabetic patients up to and including the age of 33 years. Most of the patients, when first seen, had been on treatment for some time. Practically every lens in the entire series showed occasional small punctate congenital opacities and there were a few in which coronary cataract was present; the diagnosis in such cases was usually not difficult, but in those lenses in which doubt existed the changes were classified as congenital.

REPORT OF CASES

CASE 1.—M. B., a boy, aged 12 years, seen in January 1931, had had uncontrolled severe diabetes over a period of three years and failing vision for three months. The blood sugar was 310 mg. per hundred cubic centimeters, and glycosuria was present. Uncorrected vision was 6/60 in the right eye and 6/9+ in the left; with the ophthalmoscope, posterior subcapsular opacities were noted in each lens.

In September, countless fine snowflake opacities were discovered in the cortex of the right lens; they were more numerous posteriorly and in one or two areas were grouped into radial striae. A few fine flakes were seen in the nucleus. In the left eye the changes were similar but less advanced. Following linear extraction of the right lens the corrected vision was 6/5.

In April 1932 the cataract in the left eye was more advanced; the snow storm appearance was present throughout the cortex and there were smaller flakes in the nuclear region.

CASE 2.—C. G., a girl, aged 12 years, seen in June 1931, had had uncontrolled severe diabetes over a period of one year. The blood sugar was 350 mg. per hundred cubic centimeters and there was glycosuria. The corrected vision in each eye was 6/6; a hyaloid artery remnant was present on the posterior capsule of each lens and there was an occasional punctate congenital opacity.

In December each lens showed a snowstorm appearance, with innumerable grayish and bluish white flaky opacities in the anterior cortex and an even greater number in the posterior cortex. Under the posterior capsule was a thin granular gray saucer-like opacity, and here and there in the lens iridescent crystals were noted. The lens sutures and fibers were unusually distinct.

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Read before the Section on Ophthalmology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

CASE 3.—A. G., a girl, aged 12 years, seen in February 1931, had had poorly controlled severe diabetes over a period of two years. The blood sugar was 300 mg. per hundred cubic centimeters despite daily administration of 156 units of insulin, and glycosuria was present. The vision was 6/6 in each eye. The right lens showed a few snowflake cortical opacities and many delicate iridescent crystals in the anterior and posterior subcapsular regions. The left lens was of similar appearance.

CASE 4.—L. B., a boy, aged 14 years, seen in July 1928, had had poorly managed diabetes over a period of five years. There was no glycosuria but despite insulin the blood sugar was 170 mg. per hundred cubic centimeters. Uncorrected vision was 6/15 in the right eye and 6/30 in the left; early bilateral posterior subcapsular cataracts were noted but were studied only with the ophthalmoscope.

In January 1930 the vision was approximately the same. Snowflake opacities were noted throughout the anterior and posterior cortical areas in each lens, and in the posterior subcapsular regions there were confluent opacities. Both lenses were removed by linear extraction and, following subsequent needlings, the corrected vision in the right eye was 6/9 and in the left 6/5.

CASE 5.—L. La T., a youth, aged 16, seen in June 1931, had had poorly controlled diabetes over a period of three years. The blood sugar was 318 mg. per hundred cubic centimeters and there was glycosuria. The corrected vision was 6/6 in each eye. In the anterior and posterior cortical areas of each lens were many punctate opacities, the exact nature of which was indeterminable: they may have been congenital or a complication of the diabetes. In the anterior subcapsular areas there were a few finely granular radial striate opacities, which were undoubtedly pathologic.

CASE 6.—O. P., a youth, aged 17, seen in April 1931, had had moderately well controlled diabetes over a period of five years. The blood sugar was 337 mg. per hundred cubic centimeters and there was glycosuria. The vision was 6/5 in the right eye and 6/6 in the left. In the right lens were a few fine punctate cortical opacities, while in the posterior subcapsular area fine granular radiating striae were seen. The left lens contained similar but fewer opacities.

TABLE 1.—*Data on One Hundred and Twenty-Six Cases of Diabetes*

	Total Number of Cases	Age Group (in Years Inclusive)	Number of Cases	Sex		Duration of Diabetes (From History)		Blood Sugar Extremes	Average, Mg. per 100 Cc.
				Male	Female	Extremes	Average, Years		
All cases	126	2 to 10	31	14	17	6 wks. to 7 yrs.	1.7	91 to 422	268
		11 to 20	58	30	28	6 wks. to 10 yrs.	3.3	112 to 540	277
		21 to 30	31	17	14	2 days to 8 yrs.	3.6	200 to 700	358
		31 to 33	6	5	1	1 to 9 yrs.	4.6	280 to 665	398
Cases without cataract	106	2 to 10	31	14	17	6 wks. to 7 yrs.	1.7	91 to 422	268
		11 to 20	50	25	25	6 wks. to 10 yrs.	3.5	112 to 540	283
		21 to 30	22	12	10	2 days to 8 yrs.	3.3	200 to 510	362
		31 to 33	3	2	1	3.5 to 7 yrs.	5.2	280 to 282	281
Cases with cataract	20	11 to 20	8	5	3	1 to 5 yrs.	3.1	170 to 350	303
		21 to 30	9	5	4	2 to 13 yrs.	5.5	179 to 700	385
		31 to 33	3	3	0	3 to 9 yrs.	5.3	380 to 665	487

TABLE 2.—*Data on Twenty Cases of Diabetic Cataract*

Case	Age, Years	Sex	Duration of Diabetes, Years	Blood Sugar, Mg. per 100 Cc. (On Admission)	Glycosuria (On Admission)	Acetone (On Admission)	Diacetic Acid (On Admission)	Coma (History)	Other Diseases	Visual Failure	Type of Cataract*	Vision (Postoperative)
1	12	♂	3	310	+	..	+	..	Sinusitis	3 mo.	SS	OD 6/5
2	12	♀	1	350	+	..	+	..	Tonsillitis; abscess of arm	None	SS, PSC, IC	
3	12	♀	2	300	+	+	..	..	Sinusitis; scabies	None	SS (atypical), ASC, PSC, IC	OD 6/9 OS 6/5
4	14	♂	5	170	—	+	+	..	Sinusitis; Vincent's angina; furuncles	No history	SS, PSC	
5	16	♂	3	318	+	..	+	..	Sinusitis	None	ASC	
6	17	♂	5	337	+	..	+	..	Otitis media; mastoiditis	None	PSC (striae)	
7	18	♀	2	316	+	..	+	..	.....	3 mo.	SS, ASC, PSC, IC	
8	19	♂	3	337	+	+	..	..	.....	None	PSC	
9	22	♂	4	231	+	+	..	..	Scarlet fever; mastoiditis; multiple neuritis; retinitis	Due to retinitis	SS, IC	
10	22	♂	2	400	+	..	+	..	Sinusitis	Less than 6 mo.	SS, ASC, IC	OD 6/6 — OS 6/6 ++
11	22	♀	10	273	+	+	+	+	.....	18 mo.	SS, ASC, PSC	OS 6/6 ++
12	23	♂	4	289	+	+	..	..	Malignant lymphoma of cecum	20 mo.	SS (atypical), PSC, IC	OD 6/6 OS 6/5
13	24	♀	5	700	+	+	+	+	Mucous colitis	3 mo.	No record of morphology	
14	26	♀	4	557	+	+	..	+	Pyorrhea; pregnancy	3 yrs.	SS, PSC	OD 6/6 ++ OS 6/9
15	27	♀	8	362	+	..	+	..	Myocarditis; pregnancy	No history	ACS, PSC	
16	28	♂	6	478	+	+	+	..	Influenza; oral sepsis; retinitis	None	ASC, PSC, IC	
17	30	♂	13	179	—	..	+	..	Arteriosclerosis	10 yrs.	ASC, PSC	
18	31	♂	3	417	+	—	..	..	.....	None	SS, PSC	
19	33	♂	4	380	+	+	..	..	.....	2 yrs.	SS, PSC, IC	
20	33	♂	9	665	+	+	..	..	Endocarditis; old iritis; furuncles; septicemia	No history	PSC	

* SS indicates snowflake or snowstorm; ASC, anterior subcapsular; PSC, posterior subcapsular (saucer-like); IC, iridescent crystals.

CASE 7.—F. F., a girl, aged 18 years, seen in February 1934, had had diabetes over a period of two years. The disease had been under excellent control for six months, but vision had gradually failed over a period of three months. The blood sugar had been 316 mg. per hundred cubic centimeters at one time but was within normal limits at the time of ocular examination. Uncorrected vision was 6/60 in each eye. In each lens the entire cortex was filled with myriads of snowflake opacities and there were fine granular opacities and vacuoles in the anterior and posterior subcapsular areas. The posterior subcapsular changes were rather dense and a number of iridescent crystals were present.

When seen in March and again in April the cataracts were apparently the same.

CASE 8.—W. L., a youth, aged 19, seen in March 1931 had had poorly controlled severe diabetes over a period of almost three years. The blood sugar was 337 mg. per hundred cubic centimeters, and glycosuria was present. The vision was 6/6 in each eye. A few small punctate congenital opacities were found in the anterior cortex of each lens; in the posterior subcapsular region of the right lens were gray granular radial spicules extending into a central granular saucer-like opacity.

CASE 9.—W. N., a man, aged 22, seen in November 1931, had had uncontrolled diabetes over a period of four years. There were a hyperglycemia of 231 mg. per hundred cubic centimeters and glycosuria. The corrected vision was 6/12 in the right eye and 6/15 in the left, a reduction principally due to bilateral retinitis. In the anterior and posterior subcapsular areas of each lens were innumerable snowflake opacities, which in places were confluent and arranged in radial spicules. A few iridescent opacities were found in the posterior subcapsular region (fig. 1). In February and July 1932, no further changes were seen in either lens.

CASE 10.—G. S., a man, aged 22, seen in August 1931, had had symptoms of severe diabetes over a period of four months. The blood sugar was 400 mg. per hundred cubic centimeters and there was sugar in the urine. As a result of high compound hyperopic astigmatism and rapid reduction of blood sugar, the uncorrected vision in each eye was 6/21. A few punctate congenital opacities were found in the anterior and posterior cortical regions of each lens.

In November 1932, no additional lenticular changes were seen. Uncorrected vision in the right eye was 6/15 and in the left 6/9.

In May 1933, despite a restricted diet and insulin, bilateral cataracts had formed and the vision in each eye was reduced to 1/120. The right lens was swollen; veil-like opacities, water slits and opalescent crystals were found under the anterior capsule, while the anterior cortex was filled with large, coarse, shimmering opacities; the posterior cortex was invisible. Study of the left lens revealed earlier changes of a similar nature; in the clearer anterior cortical areas were snowflake opacities, which may have been present throughout the entire cortex in the earlier stages. Two months after linear extraction the corrected vision in the right eye was 6/6—1.

In August 1933 the left lens was diffusely gray and swollen. Myriads of confluent gray granules and one large sector opacity were found in the anterior cortex; the lens was similar in appearance to that of a rapidly advancing senile cataract. The corrected vision, after linear extraction, was 6/6+.

CASE 11.—D. G., a woman, aged 22, seen in August 1931, had had severe uncontrolled diabetes over a period of approximately ten years. Vision had failed gradually for eighteen months. Despite a restricted diet and insulin, the blood sugar was 273 mg. per hundred cubic centimeters and there was glycosuria. The vision in the right eye was 6/12+ and in the left 2/60. In the anterior subcapsular region of the right lens was a thin veil-like disciform clouding; fine opaque radial striae were present in the anterior and posterior cortical areas, and between these striae were many snowflake opacities. A diffuse, confluent, granular, saucer-like posterior subcapsular opacity was noted. The left lens was similar but the opacities were more numerous. A linear extraction of the left lens was made and a few months later the corrected vision was 6/6+.

In September 1932 the vision in the right eye was 6/12 and the lens opacities were somewhat more advanced.

CASE 12.—J. C., a man, aged 23, seen in February 1931, had had poorly controlled severe diabetes over a period of four years, with gradual loss of vision for twenty months. The blood sugar was 289 mg. per hundred cubic centimeters, and glycosuria was present. Uncorrected vision was 3/60 in each eye. In the right lens were several large, flaky gray opacities immediately beneath the anterior capsule; throughout the anterior cortex were many soft punctate and granular opacities, which in places were aggregated to form radiating striae. The lens fibers were unusually distinct and in some areas there were intervening fine linear opacities. In the central posterior subcapsular area was a typical saucer-like opacity composed of confluent gray granules and iridescent crystals; subcapsular spicules extended from the periphery into this central mass. Gray granular opacities were present in the posterior cortex. The left lens was similar in appearance (figs. 2 and 3).

In March, the right lens was extracted; the corrected vision was 6/6. The left lens was extracted in April and the vision with correction was 6/5.

CASE 13.—B. M., a woman, aged 24, seen in September 1929, had had poorly controlled severe diabetes over a period of five years and failing vision for three months. The blood sugar was 700 mg. per hundred cubic centimeters and there was glycosuria. The vision was 3/60 in each eye. Both lenses showed anterior and posterior cortical opacities but unfortunately no detailed description was recorded. The lenses were extracted and the corrected vision in the right eye was 6/5 and in the left 6/6.

CASE 14.—L. G., a woman, aged 26, seen in October 1930, had had poorly controlled severe diabetes over a period of four years and gradual loss of vision for three years. Blood sugar was 557 mg. per hundred cubic centimeters and sugar was found in the urine. The vision was 1/60 in each eye; there were subcapsular opacities in both lenses, but no record of the details was made.

In February 1931 the vision in the right eye was 1/60 and in the left 1/120. In the anterior subcapsular and cortical areas of the right lens were many fine snowflake opacities, which were more numerous in the periphery of the lens (fig. 4). Similar opacities were present in the posterior cortex and many fine radial spicules, composed of confluent flakes, extended inward from the periphery. The posterior subcapsular region showed an iridescent irregular saucer-like opacity. The left lens was similar but the changes were more advanced. The right lens was extracted in the capsule and the corrected vision was 6/6+.

In April an extracapsular extraction of the left lens was made; the corrected vision was 6/9.

CASE 15.—I. S., a woman, aged 27, seen in March 1933, had had moderately well controlled diabetes over a period of eight years. The blood sugar was 362 mg. per hundred cubic centimeters and sugar was found in the urine. The vision was 6/6 in the right eye and 6/9 in the left; in the anterior and posterior subcapsular regions of each lens were radial striae composed of fine granular grayish white opacities.

CASE 16.—L. H., a man, aged 28, seen in September 1927, had had poorly controlled severe diabetes over a period of two years. The blood sugar was 478 mg. per hundred cubic centimeters, and glycosuria was present. Uncorrected vision was 6/10 in each eye and both lenses appeared normal.

In March 1931, corrected vision in each eye was 6/6. There were many punctate opacities and opalescent crystals in the anterior subcapsular region of the right lens; similar but more advanced changes and many small vacuoles were present in the posterior subcapsular area. The left lens had a similar appearance.

CASE 17.—S. G., a man, aged 30, seen in August 1933, had had uncontrolled mild diabetes over a period of thirteen years. Vision had gradually failed for eleven years, and a cataract had been removed from the left eye at another hospital in 1932. He had been on insulin. The blood sugar was only 179 mg. per hundred cubic centimeters and the urine was normal. The right lens showed many fine punctate opacities in the anterior subcapsular area and radial striate opacities in the anterior cortex. Bluish gray punctate dots were pres-

entire the perinuclear region. In the posterior subcapsular area was a dense granular saucer-like opacity.

CASE 18.—A. E., a man, aged 31, seen in June 1931, had had uncontrolled severe diabetes over a period of three years. The blood sugar was 417 mg. per hundred cubic centimeters, and the urine contained sugar. The vision was 6/6 in each eye. There were many small grayish white snowflake and punctate opacities in the anterior and posterior cortex of the right lens. The left lens was similar but the flakes and punctate dots were irregular in size and more numerous, especially in the posterior cortex.

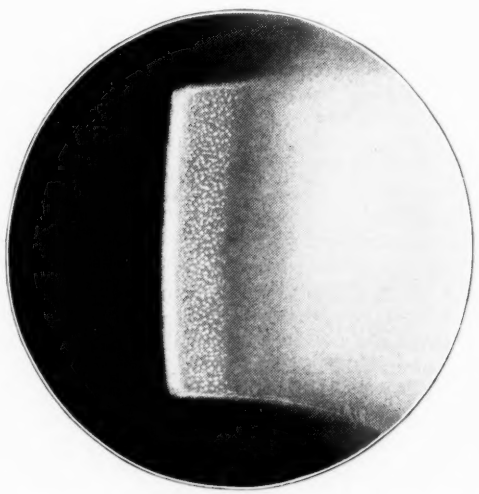

Fig. 1 (case 9).—Snowflake or snowstorm cataract in lens cortex of right eye; high power slit lamp.

CASE 19.—G. B., a man, aged 33, seen in January 1932, had had poorly controlled severe diabetes over a period of four years. The vision had failed gradually over a period of two years and rapidly for one month. The blood sugar was 380 mg. per hundred cubic centimeters, and glycosuria was present. Uncorrected vision was 6/12 in each eye. Snowflake opacities were seen in the anterior and posterior cortical areas of the right lens; in the anterior subcapsular region were many fine iridescent crystals, and delicate radiating wedge-shaped spicules lay in the cortex. The left lens was similar but the snowflake opacities were more numerous and there was a gray opalescent granular saucer-like opacity in the posterior subcapsular area.

CASE 20.—P. E., a man, aged 33, seen in March 1931, had had poorly controlled severe diabetes over a period of nine years. The blood sugar was 665 mg. per hundred cubic centimeters, and sugar was found in the urine. The uncorrected vision in the right eye was 6/9 and in the left 6/15. There was evidence of an old iritis in the left eye. In the posterior subcapsular region of the right lens were many radial spicules extending centrally into an irregular gray granular saucer-like subcapsular opacity. There were similar changes in the left lens.

COMMENT

Severe, prolonged, poorly controlled diabetes was present in many of the 126 cases and, with but two exceptions, in twenty cases presenting complicating cataracts. According to the histories, the duration of the general disease, at the time lens opacities were detected, varied from one to thirteen years, the average being approximately five years. The severity of the diabetes in patients with cataracts was indicated by the high concentrations of the blood sugars and glycosuria in eighteen of the twenty cases, and the invariable evidences at one time or another of ketonemia and ketonuria. The blood sugars, on admission to the hospital, varied from 170 to 700 mg. per hundred cubic centimeters, the average concentration being 373 mg. Evidences of ketone bodies in the urine were found in every patient; in three cases there was a history of coma. These conditions were present despite attempts to restrict the diet and advice as to the use of insulin; they go to show the difficulties in the home control of diabetes. In many of the patients other pathologic conditions of more or less severity were known to have been present or were discovered at the time of examination, but in no case were they of a type known to cause cataract. Arteriosclerosis was found in only one patient.

A diagnosis of diabetic cataract was made in 20 of the 126 cases, an incidence of 16 per cent. There were thirteen males and seven females affected. The lenses were normal in thirty-one patients under 11 years of age; opacities were present in eight of fifty-eight patients aged from 11 to 20 years inclusive, in nine of thirty-one patients aged from 21 to 30 years inclusive, and in three of six patients aged from 31 to 33 years inclusive. These changes were bilateral, with one exception; in one patient, opacities were just forming in one eye and evidently had not yet begun in the other. It is recognized that diabetic cataract may form and mature within a few days, but the development of lens opacities in the cases herein reported was not extremely rapid; in most instances it was a matter of weeks or months.

Only a small number of lenses had been studied when it was realized that there were two common types of cataract. The more unusual and striking of the two was that designated as snowflake or snowstorm cataract; it appeared first in the anterior and posterior cortical areas, near to but not immediately under the capsule, as innumerable scattered grayish to bluish white flaky opacities. In later stages the opacities occupied the entire cortex. The appearance with the biomicroscope was that of a heavy snowfall against a leaden sky. This snowstorm cataract was seen in twelve cases, an incidence of 60 per cent. It was well developed and typical in ten cases and appeared in slighty atypical form in two cases. There is reason to

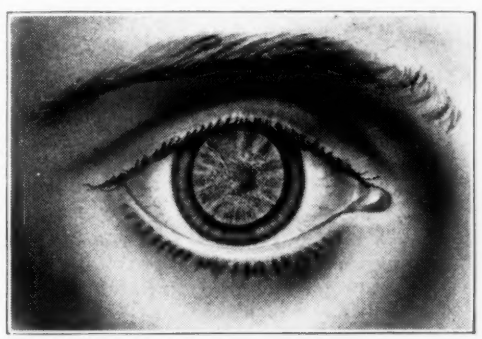

Fig. 2 (case 12).—Right eye; ophthalmoscope.

believe that such opacities may have been present in other lenses during early stages of development of the cataract.

The other common type of cataract was a saucer-like posterior subcapsular opacity composed of confluent gray granules and oftentimes containing iridescent crystals. Frequently finely granular, radial, posterior subcapsular striae extended from the equatorial zone toward or into the central opacity. This is not an unusual type of opacity, since it appears following injury, in association with certain ocular diseases and occasionally as a senile lens change. It was present in

its typical form in twelve cases and in an atypical form in two cases, an incidence of 70 per cent.

Anterior subcapsular opacities were found in eight cases, an incidence of 40 per cent; they were punctate, finely granular or veil-like and occasionally showed iridescent crystals. In some lenses delicate radial striae were present.

Iridescent crystals were noted in eight cases, an incidence of 40 per cent. They were usually located in the

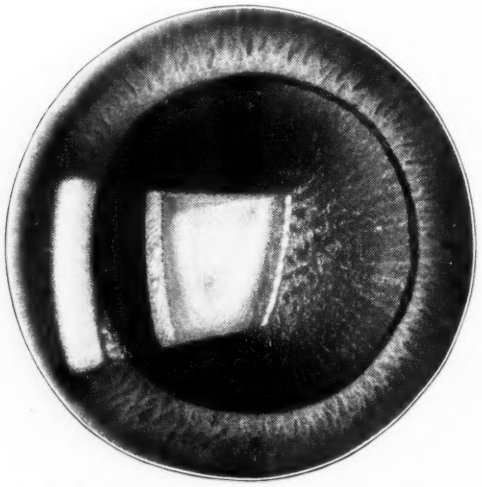

Fig. 3 (case 12).—Anterior subcapsular and posterior subcapsular opacities in right eye; low power slit lamp.

subcapsular areas but in a few lenses were found in the cortex.

It is to be understood that more than one type of opacity was present in many lenses and that vacuoles, water slits and lamellar separation were common changes.

SUMMARY

In a study of the crystalline lenses in 126 young diabetic patients, aged from 2 to 33 years inclusive, the incidence of cataract was 16 per cent.

The morphology of these cataracts differed, but two common types of lens changes were encountered:

1. Snowflake or snowstorm cataract. This type was found in 60 per cent of cases and appeared as innumerable small grayish white flaky opacities in the anterior and posterior cortical areas. In a routine study of several hundred cataracts it was seen, with one exception, only in persons with diabetes.

2. Posterior subcapsular cataract. This type was found in 70 per cent of cases as a saucer-like posterior subcapsular opacity composed of confluent gray granules and oftentimes iridescent crystals. It is not peculiar to diabetic cataract, since similar changes may follow ocular injury or disease, and it has been noted in senile cataract.

University Hospital.

ABSTRACT OF DISCUSSION

DR. ARNOLD KNAPP, New York: Most ophthalmologists who are connected with eye clinics do not see many of these diabetic cases. The one I recall best is the most recent case that I have seen. A young child presents this posterior cortical opacity and some equatorial cortical changes but none of the anterior subcapsular changes that the authors have described. I wish to emphasize the rarity of the condition and, secondly, the impossibility of changing the course of these cases by treatment. I should like to ask Dr. O'Brien where, in the lens, in these snowflake-storm cataracts, the process apparently begins. Has he observed with the slit lamp, in any of these cases, changes in the posterior layer of the iris? Is it his opinion that by treatment the progress of these cases can in any way be retarded?

DR. SANFORD GIFFORD, Chicago: We are fortunate to hear such a series of cases. The reason we consider this condition so rare is that most ophthalmologists see only the ones that go rapidly on to maturity. In the last two or three years I have seen only two cases that I can remember, both of which went on rapidly to maturity. Operations were performed with very good results. I think that is the rule in these cases, that they are not complicated cataract in the ordinary sense; they behave like other types of soft cataract. I have never seen this snowstorm type of cataract, because I have not seen them until later when the whole lens was opaque and one could not tell how they started. From what I understand about the way opacities develop in the lens, I think these opacities were once subcapsular. I believe that when they develop they were subcapsular and then later the condition would stop and the opacities became deeper as new lens fibers were formed, as in the case of parathyroid tetany. Goldschmidt was able to produce attacks of parathyroid tetany in dogs and a layer of opacities would develop. Then there would be clear lens fibers laid down on top of them, and following another attack of tetany another layer of opacities would develop. In this condition, diabetes, this is going on all the time, so as new lens fibers are formed, opacities are developed in these new layers. This posterior subcapsular type of cataract is a mixed up question. For instance, this type is usually referred to as cataracta complicata, but the posterior, saucer-shape cortical cataract resembles it, which is a very common form of senile cataract. The cataracta complicata comes forward in the lens and, starting under the anterior capsule, goes back into the lens. This looks like a picture of ordinary posterior, saucer-shape cortical cataract which is seen as a form of senile cataract, but I know it does occur in young people because I have seen it in one family in which every member developed this type of cataract at a very early age.

DR. EDMOND BLAUUW, Buffalo: The giving of a new name for this form of cataract does not have my sympathy. As I understand the speaker it is a form of cataracta punctiformis corticalis. Such forms can be congenital and acquired. The

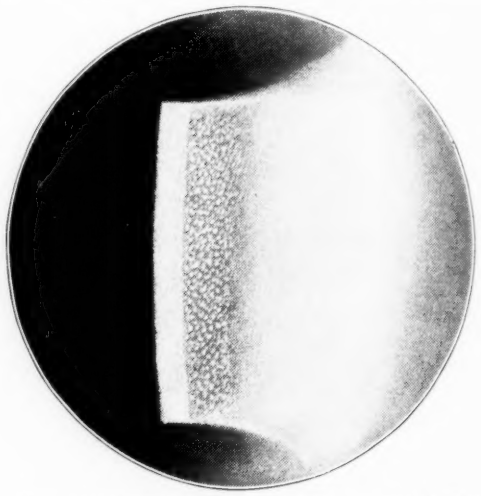

Fig. 4 (case 14).—Snowflake or snowstorm cataract in lens cortex; high power slit lamp.

origin of such opacities does not need to be directly under the capsule. The small bubbles found in posterior saucer-like cataract are not exudates. Some form of posterior, saucer-shape cataract seems to be congenital, if not acquired in early youth. Its progress is then apparently very slow.

DR. C. S. O'BRIEN, Iowa City: Dr. Knapp asks where the opacities begin. Apparently they are not typically subcapsular but appear first in the areas of the cortex that underlie the anterior and posterior subcapsular areas; i. e., in the anterior portion of the anterior cortex and in the posterior portion of

the posterior cortex. I may say that I have followed the entire development of opacities in several lenses. I have seen these normal lenses become completely opaque. That is, to me, of course, an argument against any congenital factor, since I believe that congenital lens opacities do not progress, except perhaps the coronary cataract of Vogt. As regards the iris, I have looked for indications of pathologic changes; but the only changes that might indicate disturbances such as those seen in the pigment epithelium under the microscope are deposits on the posterior surface of the cornea and in some instances on the anterior surface of the lens. So far as I have been able to determine, effective treatment of the diabetes slows down the process but eventually progression of the cataract has been noted in every lens. In answer to Dr. Gifford, I must disagree with the idea that the snowflake opacities appear directly under the capsule in the subcapsular area, and then, owing to the formation of new lens fibers, are forced toward the nuclear area: these opacities are seen first not in the subcapsular area but deeper in the cortex, and I see them progress over a period of weeks and in some instances over a period of months. New lens fibers are not formed with such rapidity. As to Dr. Blaauw's feeling that perhaps these lens opacities are congenital, I have only to reply that I have watched them develop with a rapidity that is not possible in congenital cataract. I have seen some of them develop in five or six weeks, and congenital opacities do not form in such a manner.

SUBDURAL HEMORRHAGES

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BOSTON

Mystery has always shrouded the supposedly rare condition to which Virchow gave the name of pachymeningitis hemorrhagica interna chronica. Neither the title nor Virchow's study of the subject tended to abate the mystery. It is my purpose in this paper (1) to endeavor to dispel this mystery, (2) to demonstrate that the condition is not rare, (3) to call attention to its operative curability in many cases and (4) to indicate its possible medicolegal relations.

The Massachusetts medical examiner law gives the medical examiner exclusive opportunity to investigate deaths by violence. This exclusive opportunity entails a stewardship with a responsibility for the proper use of the material that comes into his hands. One of the implied obligations of the medical examiner is to aid or if possible to stimulate medical progress in dealing with the results of traumatism. The appalling death rate from automobile and other traumatic hazards approximates wartime mortality records and has made a deep impression on American vital statistics. Head injuries are responsible in my experience for about 45 per cent of the deaths from automobile injuries. In a study during the past four years of several hundred fatal traumatic cases, arising from many hazards, in which intracranial lesions were found, significant subdural hemorrhages were present in 10 per cent and were accountable either directly for the fatal outcome or for disability and mental deterioration.

An investigation from the standpoint of the possible salvage of cases of cranial traumatism suggested that subdural hemorrhages offered a promising field as a beginning. When it was brought to their attention that this lesion was relatively common, and that surgical intervention offered the only practical solution, cooperation of the departments of neurology and of neurosurgery of the Boston City Hospital developed a diagnostic and operative technic that has led to the saving of lives, and, what is more important, of mentalities.

A primary part of this work has been a restudy of the subdural space.[1]

THE SUBDURAL SPACE

It has been taught that the subdural space is a serous space, analogous to the great serous spaces of the body proper. The difference in the reactions of the two apposed surfaces lining the space is totally unlike the reactions that are manifest in the other serous spaces. The pia-arachnoid has the function of carrying the large vessels over the surface of the brain in such a manner that no large arteries actually penetrate beneath the surface of the brain. It distributes and absorbs the cerebrospinal fluid and serves as a water bed for the brain. It is impervious to most substances, alcohol and a few drugs alone being capable of penetrating the membrane. In this way it serves as a barrier between the blood and the central nervous system. It is the only membrane in the body that can hold back an infection whose products bathe its surface, as in pachymeningitis. Unlike the serous membranes, infections beneath the surface of which tend to spread rapidly into the serous cavities, leptomeningitis tends to be limited within the arachnoid, extension to the subdural space occurring rarely. Another evidence of the imperviousness of this membrane is its ability to hold large quantities of fluid in the presence of edema, while the subdural space contains a minimal amount. The membrane resists the invasion of meningiomas and plays no part in the removal of blood from the subdural space. Though capillaries have been seen in the membrane, it has no capillary bed.

To the contrary, the dura offers little resistance to the invasion of the subdural space by infections that have succeeded in getting into its tissues; it is invaded by meningiomas; it has a capillary bed and it assumes the burden of organizing and removing subdural hemorrhages.

By a simple technic we were able to demonstrate that though sheets of clean cut flattened cells (endothelium, or possibly mesothelium?) could be readily scraped from the surfaces of the serous spaces—pericardium, pleura and peritoneum—scrapings from the dura disclosed elongated fibroblastic cells with a small mixture of flattened cells of the mesothelial type. The arachnoid, on the other hand, is covered by an irregular often multilayered integument of flattened cells.

The manifest differences in the two membranes lining the subdural space have suggested to me the concept that the skull, like other bones, enters into articulation. In this case the articulation is not with bone but with a compound organ, the brain with its covering pia-arachnoid. The relations of the two structures, skull lining and brain covering, are largely those of contiguity, the only continuity arising from nervous and vascular connections and minor supports for the falx. From this point of view the dura is the lining of an articulation and has the character of a simple fibroblastic tissue, which Maximow has shown to be the standard lining

From the Medical Examiner Service, Suffolk County, Mass.
Owing to lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.
Read before the Section on Miscellaneous Topics, Session on Forensic Medicine, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Leary, Timothy, and Edwards, E. A.: The Subdural Space and Its Linings, Arch. Neurol. & Psychiat. **29**: 691 (April) 1933.

of the synovial spaces. This concept simplifies the approach to the study of subdural hemorrhages.

SUBDURAL HEMORRHAGES

Fifty cases of subdural hemorrhage in this series have been divided into the following five groups for convenience of study:

1. In eleven cases the hemorrhage was fresh, in the form of fluid blood or soft clots, which could not be preserved (fig. 1).

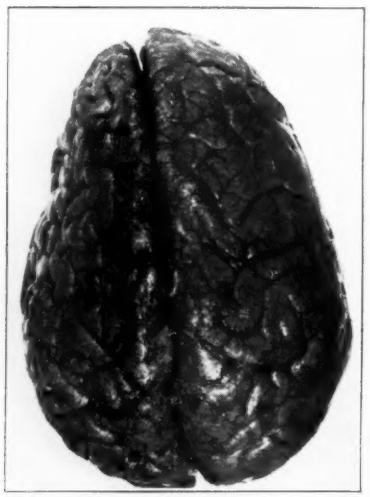

Fig. 1.—Stage 1, characterized by fresh blood. Compression and molding of brain on left and flattening of brain on right are shown.

2. In six cases the blood was in the form of firmer clots, which tended to adhere to the dura (fig. 2).

3. In fourteen cases the hematoma appeared in the form of chocolate clotted blood and yellow fluid adherent to the dura, with beginning organization and a neomembrane from the dural side, but no inner limiting membrane (fig. 3).

4. In fourteen cases the hematoma showed a completed double membrane with an internal layer enclosing the chocolate clot and brownish fluid (fig. 4).

5. In five cases a fused neomembrane without hematoma and almost complete healing marked the terminal stages of the lesion (fig. 5).

These divisions serve as a rough measure of the age of the hemorrhage, death having followed too rapidly in the first two groups to permit of any organization, the third group showing early organization, i. e., on one side only of the clot, the fourth group showing more advanced organization and a neomembrane enveloping the clot, the fifth group showing an almost healed process.

STATISTICAL DATA

Stage 1. In the eleven cases in this series the ages varied from 14 to 63 years. Six were men, five were women. Six were not addicted to alcohol, five were alcoholic. Death occurred in periods of from one-half to eighteen hours after symptoms appeared or following falls, with one exception. In three cases blows on the head had preceded the death. In three cases falls on stairs, in one a fall from a couch, in one a fall on the ice, were apparently the means of provoking hemorrhage. In one case the rupture of the pedicle of a meningioma, in a second case the rupture of the dura in advance of a parotid myxochondrosarcoma led to the hemorrhage. In one alcoholic individual there was no history of injury. Ecchymoses of the scalp were found in three cases. In no case was there a fracture of the skull. In seven cases the hemorrhage was on the right side, in four cases it was on the left.

Stage 2.—The ages ranged from 36 to 56 years. There were three women and three men. There was a history of trauma occurring from seventeen hours to three days before death. Five out of the six patients were addicted to alcohol. Falls on the street in two cases, in one case on the stairs and in one case on the floor preceded the death. In two alcoholic patients there was no record of injury. In three cases there were ecchymoses of the scalp. The skull was fractured in one case following a fall down stairs. The hemorrhages were on the left side in four patients and on the right side in two.

Stage 3. The ages ranged from 28 to 67 years. There were seven women and seven men. Seven patients were alcoholic and seven were not. In four cases there was no history of trauma. In the others there was a history of injury occurring from a few days to fifteen days before death. In five cases falls on the floor, in two cases falls on the ice, in one case a fall on the stairs, in one a fall from a cot and in one striking of the head by a falling wrench had been the cause of the injury. In seven cases a visible contusion of the scalp was disclosed at postmortem examination. No skull fractures were found in this group. The hemorrhages were on the right side in nine cases and on the left side in five.

Stage 4. The ages ranged from 42 to 78 years. All fourteen patients were men. Seven were alcoholic and seven were not. The completed membrane in this stage indicates a process that has taken at least a month, usually months and possibly years to develop. The shortest dependable history was that of a man, aged 78, a carpenter, who fell a distance of 3 feet from a ladder thirty-nine days before his death. In a second case in a man who twenty-one days before death fell from a table 3 feet high, landing on his buttocks, without striking his head, the character of the membrane indicated that the lesion was of much earlier development. A third patient fell down stairs three months before death. A fourth had a fall on the floor three months before death. A fifth was struck by an automobile four months before death. A sixth was struck by a falling coal chute six months before death. A seventh fell striking his head six months before death. An eighth had a fractured skull one year before death. In the other cases there was no history of an old injury. Two individuals in this series had been struck by automobiles, one fell backward down stairs, four fell on the street or on the floor a few days before death. In two of these, minor recent fractures of the orbital plates without brain injury were found at postmortem examination. In one case a fall down stairs resulted in a temporal fracture with epidural hemorrhage seventeen days before death. In one patient, a man found uncon-

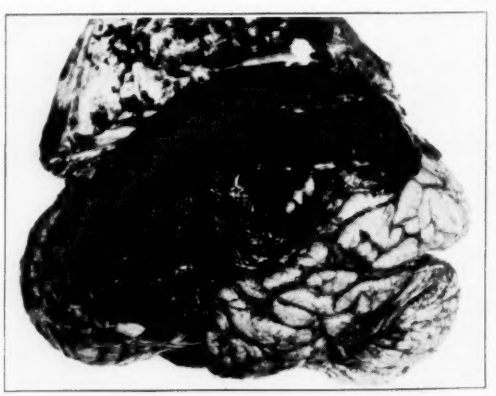

Fig. 2.—Stage 2, characterized by a nonadherent clot.

scious on the street, a fracture of the base of the skull with contusion and laceration of the basilar surfaces of the frontal lobes was present. The hemorrhages were on the left side in eight cases, on the right side in three and bilateral in three. Massive recurrent hemorrhages had occurred in five cases, in three of which the inner neomembrane was ruptured and much of the clot lay free in contact with the arachnoid.

Stage 5. This group consisted of five men, ranging in age from 47 to 84 years. Three were alcoholic. The histories are unsatisfactory, two of the patients suffering from post-traumatic psychosis and a third being epileptic. In one case a fracture of the skull due to an automobile accident had occurred one year and four days before death. In a second case an old fracture had been followed by epilepsy. In two cases recent fractures of the skull, due to a fall in one case and to an automobile accident in the other, had preceded the death. In both cases there was contusion of the scalp. The membrane was bilateral in four of the five cases and unilateral on the right side in one.

Combined Data.—In the fifty cases studied the ages ranged from 14 to 84 years. Thirty-four were men,

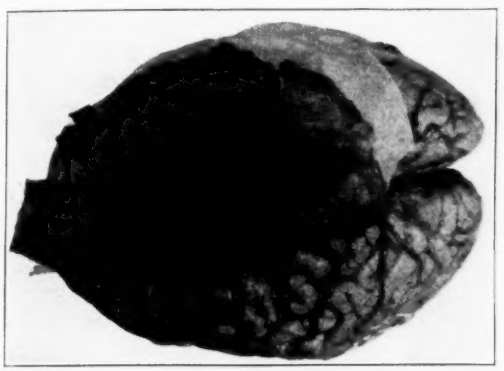

Fig. 3.—Stage 3, showing outer neomembrane with chocolate clot adherent to the dura.

sixteen were women. The women were limited to the first three stages. They appeared to suffer more serious hemorrhages or succumbed more readily than men. Twenty-seven were addicted to alcohol, twenty-three were not. Hemorrhages were unilateral in forty-three cases and bilateral in seven. Of the forty-three unilateral hemorrhages, twenty-two were on the right side and twenty-one on the left. In five cases recent fractures of the skull were found in cases with old neomembranes. In two of the older cases with membranes, recent minor fractures of the orbital plates were found. In four cases, evidences of old cerebral traumatism were found.

COMMENT

In many of the cases the minor character of the traumatism that leads to a subdural hemorrhage is striking. Relatively trivial blows or falls on the head, which are suffered daily without harmful results by many individuals and which have been experienced previously by victims of subdural hemorrhage without harmful effects, may be responsible for a hemorrhage at a critical moment. Indeed, falls without injury to the head have been apparently efficient in producing the lesion.

The relation of alcoholism to the condition is close. In this series, 54 per cent of the victims were addicted to alcohol. In a larger clinical series, alcoholic addiction was reported in 40 per cent. The higher mortality rate in alcoholic individuals is probably responsible for the difference in this respect.

PATHOGENESIS OF SUBDURAL HEMORRHAGE

This series of cases permits a visualization of all stages in the evolution of the process from fresh hemorrhages responsible for rapid death through the various degrees in the formation of the clot and the neomembrane, the hemolysis and liquefaction of the hematoma to the late picture of a fused thin velvety pigmented membrane.

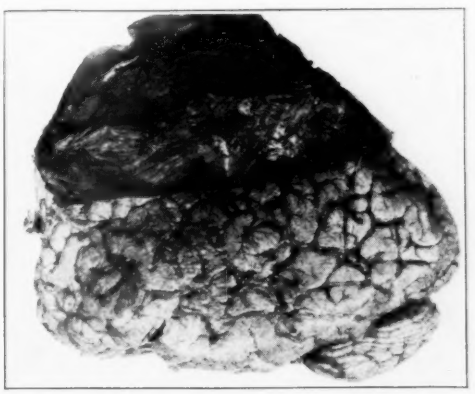

Fig. 4.—Stage 4, showing double neomembrane with clot between layers. Molding of the brain is shown.

Etiology.—The Source of the Hemorrhage: It is evident that hemorrhage into the subdural space can arise from the rupture of vessels anywhere in the structures abutting on or lining the cavity. In the new-born the dura is considered to be the site of most of the lesions through birth injury usually to the tentorium. In skull fractures, laceration and contusion of the brain is the usual source. In the cases included in this series, unassociated with fracture, the dura was responsible for two cases. In one case rupture of the pedicle of a meningioma led to rapid death from arterial and venous bleeding. In the second case a myxochondrosarcoma of parotid origin, which had penetrated the skull, led to stretching and rupture of the dura with associated hemorrhage. In the cases unassociated with fracture of the skull or evident brain damage it is impossible to determine the source of the hemorrhage if time enough

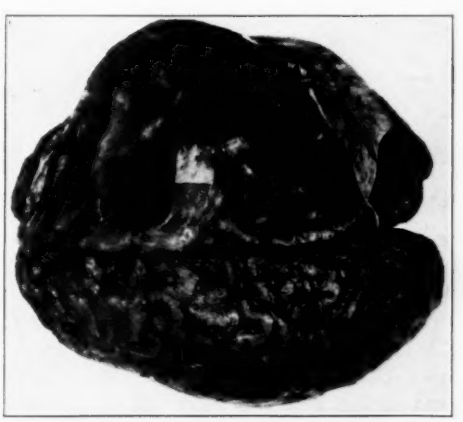

Fig. 5.—Stage 5, showing fused double neomembrane. Window showing dura beneath.

has elapsed to obscure or heal the bleeding vessel. In the cases accompanied by rapid death, in which the blood is found still fluid at autopsy, search for the source is more fruitful. In eight cases I have been able to find the bleeder, which in five cases was a torn bridging vein and in three cases a vein at the surface of the arachnoid.

The slowness with which blood frequently collects in the hemorrhages unassociated with marked traumatism is an added indication that the hemorrhage is usually venous and perhaps intermittent as the intracranial pressure increases and is modified when the brain accommodates itself to the increasing pressure. Though the subdural space is a cavity, hours at least are often necessary before urgent symptoms appear.

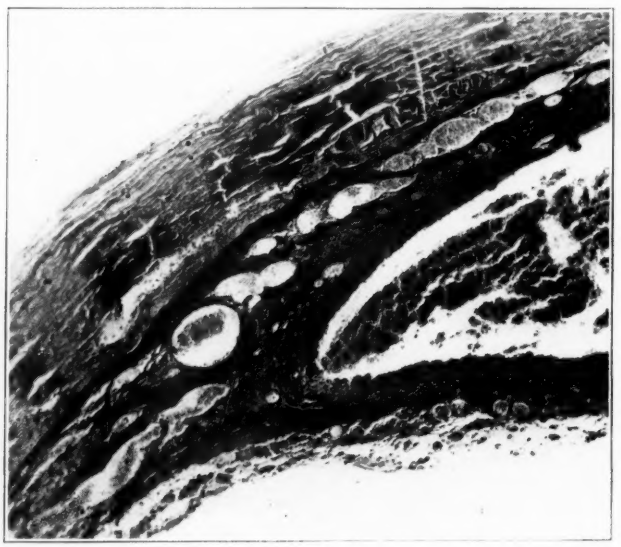

Fig. 7.—Junction of two layers of neomembrane with clot enclosed. Note giant capillaries.

Death in the rapidly fatal cases is due to the sudden rise in intracranial pressure. In cases of more slowly developing hemorrhages, headache, semicoma, transient hemiplegia, hyperactive reflexes and spastic quadriplegia may be present. In the cases of the more chronic type, mental deterioration and psychoses mark the course of the disease. It is amazing how much compression the brain will stand if the compressing force is slowly applied. Some of the brains in this series present a degree of deformity that would seem to be inconsistent with even vegetative functioning.

Alcoholism: The relation of alcohol addiction to the production of subdural hemorrhages is significant. It is possible that the associated edema of the arachnoid may serve mechanically to favor rupture of bridging veins. More reasonable is the belief that alcoholism leads to more frequent traumas that are responsible for the result.

Hemorrhagic Diathesis: No evidence of a tendency to hemorrhage could be ascertained in the cases reported in this series. A fatal subarachnoid and subdural hemorrhage, largely subdural, occurred in a case of Streptococcus hemolyticus septicemia following abortion in one of my earlier series.

Pathology.—The subdural space is a closed space. When blood or exudate escapes into it the only means of removal are absorption, organization, or operative removal through an opening in the skull. There is no evidence that the impervious surface of the arachnoid or the relatively avascular dura can bring about any measurable degree of absorption as such.

Unlike the repair processes seen in the serous cavities in which all surfaces in contact with foreign material, either blood or exudate, take part in the organization, the effort to remove the material in the subdural space is the function of the dura. The impermeable, highly vascularized arachnoid, lacking a capillary bed, plays no part in the procedure.

As the dura is a dense fibrous membrane which is poorly vascularized, though it is a support for large blood vessels, the beginnings of organization are delayed. Evidence of the adhesion of the clot to the dura and the beginning of granulation is usually manifest only during the second week or later. There is first formed a thin layer of young tissue along the whole of the dura in contact with the blood, and small flying buttresses of vessels and fibroblasts are thrown out into that layer of the clot nearest the dura. As the proximal layer of granulation tissue develops there is slowly formed at the edges of the clot a layer, which spreads over the internal surface of the clot (fig. 7). Ultimately, in a period which requires weeks in most cases, the internal layer envelops the clot, separating it from the arachnoid.

The outer membrane may be relatively thick and it is vascular. There is a moderate degree of vascularity of the portions of the inner layer that are nearest the dura. The midportion of the internal enveloping membrane is always paper thin and made up of a few layers of fibroblastic cells without vessels (fig. 8). In the meantime, changes in the blood pigment result in a brownish discoloration leading to formation of a chocolate clot.

Fig. 11.—Giant capillary with rupture at upper end and hemorrhage.

Hemolysis is relatively late, but after a period, usually of weeks to months, liquefaction of the midportions of the clot may give rise to a central cavity containing brownish fluid. Histiocytes invade the clot and are

found in numbers in the young tissue, loaded with blood pigment. They also invade the arachnoid barrier and give up their pigment in the arachnoid spaces to the cerebrospinal fluid, producing xanthochromia. This color reaction may be very marked in some cases and may be almost absent in others. It has diagnostic significance when it is found.

When the repair process has progressed to a certain degree, the handicap under which it is working comes

Fig. 12.—Stage 4. Recurrent hemorrhage. Fall of 3 feet with headache thirty-nine days. Hemiplegia seventeen days. Two planes of compression of the brain are shown.

into evidence. Both the density and the relative avascularity of the dura play a part. The principal difficulty arises from the inefficiency of the venous drainage. The possibilities of venous outflow through the venous channels in the dense tissue are limited at best, and new channels are apparently not produced. A passive hyperemia of the granulating layer is an early phenomenon.

The capillary vessels become overdistended with blood, and so-called giant capillaries result (fig. 9). These vessels with thin walls of the capillary type may become so distended that they may reach a diameter equal to eighteen times that of a normal capillary. The back pressure may even dilate vessels on the arterial side, which, few in number, are readily identified by their relatively thicker walls. Active repair under these conditions tends to come to a standstill. Remarkable is the failure in most cases to form a layer of dense scar tissue such as arises in granulating processes elsewhere when healing is long delayed. Though a layer of what might be called scar tissue may arise directly along the dura, the tissue in general tends to be relatively edematous and not too rich in collagen.

The breaking up of the complex albuminous molecules of the blood detritus into simpler molecules tends to increase osmotic pressure with the absorption of fluid. Even with this dilution the fluid within cystic hematomas may be under such pressure that it spurts forth for a distance when the membrane is incised during operation in some cases.

Because of the imperfection of the healing, a subdural hematoma once established may persist for years. Dr. Myrtelle Canavan presented before the Massachusetts Medicolegal Society an underdeveloped brain with its membranes, compressed by a bilateral subdural hematoma which from the history had been present in a boy for twelve years. There was no more evidence of complete healing in this case than is apparent in cases in which the lesion is only months old.

Another factor of importance in delaying healing is the occurrence of secondary hemorrhages (fig. 10). As would be expected, the thin-walled giant capillaries, poorly supported in the flimsy granulation tissue, are prone to rupture (fig. 11). Secondary hemorrhages occur usually within the completed membrane of the fourth stage. In three of the cases in the series under consideration the new hemorrhage had burst through the thin inner layer of the neomembrane and much of the clot was found lying free on the inner surface of the membrane. Repeated hemorrhages of lesser degree serve to prolong the healing of the lesion. Massive secondary hemorrhages are not infrequently responsible for the fatal issue (fig. 12).

Inflammatory Cellular Infiltration: Inflammatory reactions are commonly associated with the process of repair. Lymphoid cell infiltration in minor degree of the neomembrane is frequently encountered. Larger focal accumulations of lymphoid cells may be seen, notably in older processes, and focal infection with a polymorphonuclear infiltration is a possibility. It was undoubtedly the study of the later stages of the condition, in which the inflammatory cellular reaction was marked, that led Virchow to refer to it as a pachymeningitis. Pathologists who have approached the problem from the study of advanced lesions have seen the subdural hematoma as a complicated picture difficult to explain. Oozing hemorrhagic processes from the inflamed arachnoid in syphilitic meningo-encephalitis may lead to minor degrees of subdural neomembrane formation and have tended to confuse the issue. In the standard form of subdural hemorrhage the basic process is that of a poorly supported attempt to organ-

Fig. 13.—The crux of the situation. Branches of a single vein from a peeling of the neomembrane. The vessels are outlined by pigmented histiocytes. The area shown would present many vessels in normal granulation tissue.

ize, hemolyze and remove a blood clot. The inflammatory cellular infiltration is incidental or accidental.

Location of the Clot and the Membrane: Remarkable is the tendency of subdural hemorrhages to be unilateral. In forty-two cases in this series in which there was no fracture of the skull, the process was

unilateral in thirty-eight. It is difficult to believe that the tentorium and the falx can serve as water tight or blood tight partitions. The accumulation of the blood on one side, however, tends to crowd the brain toward the other side and the molding together by pressure of brain, falx and tentorium serves as an efficient barrier to the escape of blood onto the side opposite the source of the hemorrhage, or beneath the tentorium. This mechanism is so constant in its effects that one is led to wonder in the cases showing bilateral hematoma whether two separate hemorrhages did not occur.

In the eight cases associated with fracture the lesions were bilateral in four old cases, two with psychosis, one with epilepsy. The presumption in the others was that there had been some bilateral accumulation of blood, but the collection was much larger on one side than on the other with resulting early removal of blood on the side less affected.

The mass of the clot in fresh cases and the hematoma with membrane in late cases occupies a position over the cerebral convexity, almost without exception. In our series the distribution was usually over the frontoparietal area, with inclusion of the temporal and occipital areas in part when the lesion was extensive. In general the location tended to be more toward the frontal than toward the occipital regions when the area covered was less extensive. Gravity may be a factor in leading to this localization but it is difficult to account completely for it on this basis in individuals who were found lying on the back, in the early deaths with fluid hemorrhages, and remained so. It is not uncommon in fresh fractures to find the occipital lobes covered with a considerable layer of blood, but hematomas are rare in this region.

In one exceptional case the thickest layer of clot lay between the falx and the mesial surface of the brain, largely over the posterior half of the cerebrum. Subtentorial lesions are almost entirely limited to fracture cases with traumatism to the cerebellum and are of little practical importance. The real problem is the hematoma over the convexity with its compression of the brain. The usual location of the clot over the anterior convexity in most cases has favored its discovery by temporal exploratory burrhole operation.

FREQUENCY

In my opinion this series does not measure accurately the frequency of subdural hemorrhages. The diagnosis outside the hospital was successfully made in but one of the cases of spontaneous hemorrhage, the erroneous diagnoses being largely divided between alcoholism and cerebral hemorrhage, though in one case a diagnosis of thrombosis of the middle cerebral artery was arrived at after careful neurologic study. The large additional group of cases diagnosticated and successfully treated at the Boston City Hospital supports the belief that the condition is not rare.

Operative removal of the subdural membrane is easily possible, since the anchorage of the neomembrane to the dura is poor. The density of the dura apparently prevents the almost continuous formation of new vessels as seen in granulation tissue elsewhere. The paucity of new vessels is well illustrated in figure 13. The blown up dilated so-called giant capillary is really a sinusoidal vessel, as seen in figure 14. Recurrence of the hemorrhage after removal of the membrane is unusual if the brain expands.

MEDICOLEGAL RELATIONS

Several of the cases in this series arose in individuals at work and appeared to be related to occupation. It is not my purpose here, however, to deal with the industrial or accident insurance aspects of the subject. The criminal relations are of greater importance. Two cases illustrating possibilities which may arise out of subdural hemorrhages are submitted:

CASE 1.—C. F., a man, aged 57, was drinking with an old friend in his own bedroom. An argument arose, during which the friend pushed the victim, who fell and struck his head against an iron bed. He immediately complained of headache and in a short time became unconscious. On admission to a hospital he was in coma with stertorous respiration. The pupils were pin point and did not react. The reflexes were hyperactive. Bilateral positive Babinski reflexes were obtained. He remained in coma and died ten hours after admission. Postmortem examination disclosed hemorrhagic infiltration of the deep layers of the scalp in the left temporoparietal region with a small hematoma. The skull was thicker than average, measuring 1 cm. in thickness in the frontal region, 0.4 cm. in the temporal region and 0.9 cm. in the occiput. The left subdural space contained a layer of clotted blood measuring up to 1.2 cm. in thickness over the left cerebral hemisphere. The clot thinned out over the posterior convexity and the dura at the base was painted with a thin layer of blood. The left hemisphere was compressed and molded by the clot, the right was flattened against the skull. There was no fracture of the skull or contusion of the brain. Apart from moderate tortuosity of the vessels at the base of the brain the autopsy was otherwise not remarkable. There were no external marks of violence on the body other than the left temporoparietal hematoma.

Evidence was produced in court that the assailant had been an intimate friend of the decedent for many years and that they had never seriously quarreled. The court was informed that the postmortem observations were consistent with the claimed accidental misadventure. The court ruled that the death was due to accidental homicide.

CASE 2.—V. C., a Syrian girl, aged 14 years, was found dead, lying on a pile of rubble alongside an alley that separated a gasoline station from a shallow cellar from which a house had been removed. Both lips were swollen and lacerated. A contused laceration 4 cm. in length, extending up through the subcutaneous tissues to the mandible, ran to the left from a point 1 cm. to the left of the midline and 2.5 cm. below the point of the chin. There was a red ecchymosis over the right cheek bone. The hands were abraded over the knuckles bilaterally as though the body had been dragged to the position where found with the hands scraping the ground. The body was fully dressed except for drawers. The stocking on the right leg was torn with a series of holes on its outer aspect, and the skin underneath was reddened with superficial abrasion. The vaginal introitus showed swollen and hemorrhagic caruncular myrtiformes almost encircling it. There was hemorrhagic infiltration of the left labium over a region 1.4 cm. by 0.3 cm. There was a laceration of the perineal skin 1 cm. in length, gaping 0.3 cm.

Postmortem examination revealed hemorrhage in the left frontal area and a region of deep hemorrhagic infiltration over the left parieto-occipital region near the midline. The subdural space on the left side contained a mass of fresh clot measuring up to 1 cm. in thickness. The left subdural space was smeared with a thin layer of blood. The brain was molded by the clot on the left and flattened on the right. Subarachnoid hemorrhage was present over the anterior frontal convolution, and a bridging vein about 1.5 cm. from the mesial junction was torn. There was no fracture of the skull and no contusion of the brain.

On the following day the assailant, a young sailor, was arrested. He confessed that he had taken the girl into the shallow cellar, on her agreement to permit intercourse. It was evident that, perhaps because of dyspareunia, the experience was unpleasant. The girl screamed and tried to fight him off.

The boy admitted that he then had punched her, driving her head against the brick wall behind her. She again screamed and he ran away. Examination of the boy by alienists brought out evidence of mental inferiority and moral abnormality. He pleaded guilty to murder in the second degree and was given life imprisonment.

From a medicolegal standpoint, subdural hemorrhages present many problems. The minor character of the traumatism that may invoke a fatal hemorrhage and the possible implication of alcoholism in the etiology furnish weapons to the defenders in cases under trial, which tend to influence jury action. The occurrence of psychoses in chronic cases in this series leads one to wonder whether the fused neomembranes so frequently found in postmortem examinations in psychopathic hospitals do not indicate in some cases that a subdural hemorrhage had preceded and caused the psychosis. The failure to include examination of the head as a routine part of a complete postmortem examination has resulted in overlooking many cases of subdural hemorrhage.

CONCLUSIONS

Subdural hemorrhages are not rare but have been largely overlooked.

The source of the hemorrhage in cases unaccompanied by fracture of the skull is usually a ruptured bridging vein or an arachnoidal vein.

Alcoholism is a favoring factor.

The hemorrhage tends to be unilateral.

The inability of the relatively avascular dura to organize the subdural clot efficiently and resulting repeated secondary hemorrhages are responsible for the chronicity of many cases.

Inflammatory reactions in connection with repairing lesions are incidental or accidental.

The only practical method of cure of the condition is by operative intervention.

818 Harrison Avenue.

ABSTRACT OF DISCUSSION

DR. MILTON HELPERN, New York: I should like to ask Dr. Leary whether he considers the etiology to have been traumatic in those cases of bilateral pachymeningitis hemorrhagica interna which are seen very late, without any history and without any obvious signs of recent trauma.

DR. TIMOTHY LEARY, Boston: In the series reported, forty-two, or 84 per cent, were unilateral. Two were bilateral. These were all due to minor venous ruptures, in which the bleeding vessel could be demonstrated. The remaining six were late results of fracture of the skull. The presumption is that with venous hemorrhage the blood as it accumulates forces the hemisphere on the affected side against the falx and the tentorium and thus produces blood-tight joints with these membranes. Rarely this mechanism fails to work and a bilateral lesion results. It is also possible to have bilateral ruptures of vessels. I have been able to obtain a history of traumatism, not necessarily though usually to the head, in practically all cases. The traumatism is sometimes minimal, a fall of two or three feet.

Hobbies.—Holidays and hobbies, the two alliterative allies for health and happiness, of which no profession than ours stands in greater need, are often neglected by the hard-working medical fraternity. The vast majority of practitioners cannot, as business men do, take the week-end off and thus secure perhaps a quarter of the year for recreation, or, like clerics, concentrate their activities on the first day in the week. Further, medical practitioners, whatever sound directions on the subject of holidays they may dispense to patients, do not, it is to be feared, always set a good example in this respect.—Rolleston, Sir Humphry: General Medical Aspects of Holidays, *Practitioner* **133**:129 (Aug.) 1935.

NECROTIZING ULCERS COMPLICATING ERYSIPELAS

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During the past two years we have observed five instances of necrotizing ulcers complicating severe erysipelas. These ulcers were confined to the edematous, loose areolar tissue about the eyes. The distinguishing characteristics of the ulcers were their rapid development, phagedenic properties, punched out appearance, edematous base and profuse, creamy, yellow discharge. Two of the five cases resulted fatally. Three cases were observed in the Isolation Hospital, one in consultation with Dr. A. E. Eubank and one in consultation with Drs. H. B. Davis and Donald R. Black. The three cases observed in the Isolation Hospital were available for a bacteriologic study, which is the basis of this paper.

REPORT OF CASES

CASE 1.—A white woman, aged 28, entered the hospital, Feb. 22, 1933, with typical severe erysipelas of the face. The loose areolar tissue about the eyes was markedly edematous. Three days later a necrotizing process developed in the edematous tissue. It extended rapidly and developed a punched out appearance with very little inflammatory reaction in the periphery. The process was limited to the edematous, loose areolar tissue of both eye regions. A profuse, creamy, yellow pus exuded from the necrotic areas. Direct examination of a smear of the pus showed staphylococci. The same staphylococci were isolated in pure culture.

CASE 2.—A white man, aged 40, entered the hospital, Feb. 25, 1934, with severe erysipelas of the face. A necrotizing process developed in the markedly edematous areolar tissue of the left upper eyelid two days later. The necrotic ulcer was characterized by rapid development, phagedenic appearance and sharply defined edges with little inflammatory change in the periphery. Staphylococci were observed in the direct examination of a smear of the pus and were isolated in pure culture.

CASE 3.—A patient of Dr. A. B. Jones, a white man, aged 74, entered the hospital, April 1, 1934, with typical severe erysipelas of the face. A necrotic ulcer with punched out appearance was noted in the edematous, loose areolar tissue of the left upper eyelid at the time of admission. Staphylococci were seen in the direct examination of a smear of the purulent discharge from the ulcer and were isolated in pure culture. Subsequently the patient developed suppurative cervical adenitis in which the same causative organism was demonstrated. The patient made an uneventful recovery.

The occurrence of ulcerative lesions in the course of erysipelas was to us an extremely unusual clinical phenomenon. The rapidly necrotizing character of these ulcers and the persistent finding of staphylococci both by culture and by smear suggested a superimposed infection from a skin contaminant developing on a suitable nidus. The offending organism was suspected to have dermonecrotic properties from the rapidly destructive character of the lesions. The organism was recognized to be a staphylococcus by its morphologic and cultural characteristics.

Billroth, Koch, Ogston, Rosenbach and Pasteur[1] were early workers with the pyogenic cocci during the

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From the Contagious Service of the Kansas City General Hospital. We are indebted to Dr. Ralph Emerson Duncan for the cooperation of the laboratory and the use of its facilities and to Dr. Frank J. Hall for the interpretation of the pathologic and histologic specimens.

1. Pasteur, Louis: Bull. Acad. de méd. Paris **9**: 435, 1880.

seventies of the last century. The etiologic rôle of the streptococcus in erysipelas was established by Fehleisen.[2]

The fact that staphylococci grow luxuriantly on all ordinary mediums made for the rapid advance of the knowledge concerning the organism. Staphylococci

Fig. 1 (case 1).—Pustular lesions around the eyes, which developed eight days subsequent to the onset of the erysipelas and two days subsequent to admission to the hospital.

were originally classified by the color of the colonies into aureus, citreus and albus types. Of late the classification by their action on various sugars has received much attention. The staphylococci are distributed widely in man and the higher animals. The various strains vary enormously in virulence. The yellow pigment producing strains are usually more virulent than the white strains, but there are many comparatively avirulent yellow strains and many virulent white ones. Most cultures of staphylococci are hemolytic and many nonpathogenic strains are markedly hemolytic. This fact excludes the possibility of associating the presence of hemolysis with pathogenicity.[3] Certain strains of staphylococci produce free toxin, or exotoxin. In our strains of staphylococci, now under study, the exotoxin, with lethal and dermonecrotic properties, was the outstanding feature observed. That leukocidin was present in the filtrate of certain strains of staphylococci was established by Van de Velde[4] in 1894. He also noted the production of this toxin, which was thermolabile and independent of pigment production or hemolytic properties. It is evident that a filtrate of bacteria may contain split products that are toxic but are not true exotoxins. The filtrates from staphylococci have not received the study accorded the classic toxin elaborated by the Klebs-Loeffler organism. However, the behavior of the staphylococcus filtrate, its toxoid forming properties, and its specific antigenic properties, leave little room for questioning the fact that this substance is a free toxin perhaps of complex nature, containing a hemolysin, a cell poison, leukocidin, and other dermonecrotic toxins. Antiserum has the property of binding this toxic filtrate.[5] According to our experience the staphylococcus shows no tendency to pass the filter and the filtrates are sterile to culture.

From the case of necrotizing ulcers occurring as a complication of erysipelas, a staphylococcus was obtained in pure culture. The clinical appearance of the pus presented all the characteristic features of a staphylococcic infection. This culture was transferred to a dextrose brain broth medium. A second culture was transferred to a broth medium free from sugar. These are called filtrates A and B. Filtrate C, made from case 3, was obtained from sugar-free mediums. The literature contains many observations on the inhibiting property of the sugars on toxin formation.[6] Filtrates were obtained following Burnet's technic.[5] The hemolytic properties of these filtrates were determined by the following method:

To a rack of tubes containing 1 cc. of physiologic solution of sodium chloride, toxin was added in vary-

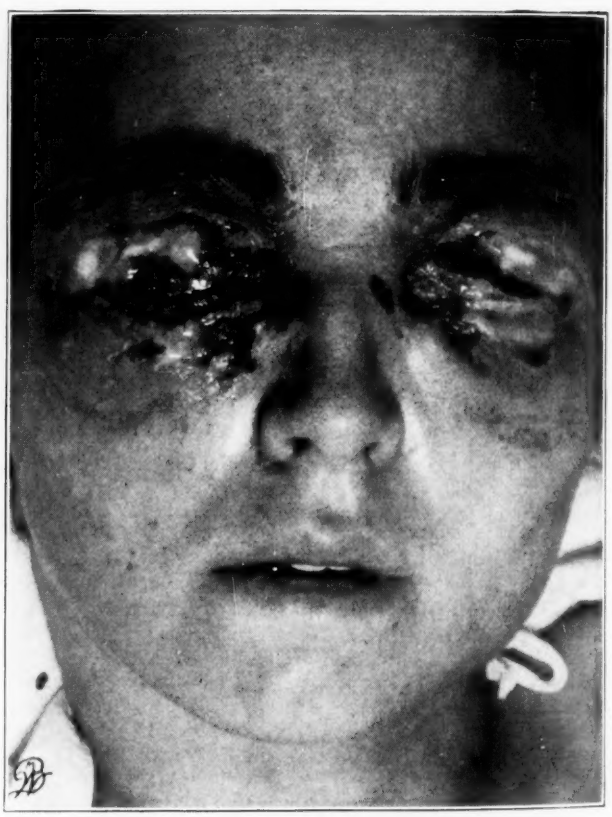

Fig. 2 (case 1).—Appearance five days subsequent to figure 1, showing phagedenic character of the ulcerations.

ing dilutions. To this mixture was added a 0.5 per cent suspension of washed rabbit red blood cells. The tubes were placed in a water bath at 36 C. for one-half hour. The results are shown in table 1. Red cells from the rabbit were used because they are considered more resistant to this toxin and the results are said

2. Fehleisen, F.: Deutsche med. Wchnschr. **8**: 555, 1882; Die Aetiologie des Erysipels, Berlin, T. Fischer, 1883.
3. Weld, J. T. P., and Gunther, A.: J. Exper. Med. **54**: 315 (Sept.) 1931.
4. Van de Velde, H.: Cellule **10**, 1894, part 2.
5. Burnet, F. M.: J. Path. & Bact. **32**: 717 (Oct.) 1929.
6. Parker, J. T.: J. Exper. Med. **40**: 761 (Dec) 1924.

to be more consistent when rabbit cells are used.[7] Filtrate A from a dextrose culture did not possess as marked hemolytic properties as did the filtrates prepared from sugar-free mediums.

The rapidly destructive character of the staphylococcic ulcer that developed as a complication of ery-

TABLE 1.—*Hemolytic Titer of Staphylococcus Filtrates*

Dilution	Filtrate A	Filtrate B	Filtrate C
1:10	++	++++	++++
1:20	++	+++	++++
1:40	+	++	+++
1:80	+	++	+++
1:160	+	++	++
1:320	+	++	0
1:640	0	++	0
1:1,280	0	0	0
1:2,560	0	0	0
Control	0	0	0

sipelas suggested the presence of a dermonecrotic agent of intense activity. With this idea in mind the necrotizing properties of this filtrate were tested on the back of shaved rabbits. The results are summarized in table 2.

Fig. 3 (case 2).—Destructive ulceration of the upper eyelid occurring during the course of the erysipelas.

If the filtrate is of intense toxicity as manifested by its necrotizing properties, the amount injected into the back of the rabbit should be less than 0.5 cc. per kilogram of body weight or death may occur from the

TABLE 2.—*Dermonecrotic Titer of Staphylococcus Filtrates*

Amount Injected	Filtrate A	Filtrate B	Filtrate C	Filtrate Streptococcus Erysipelatis	Staphylococcus Filtrates from Furuncle	Filtrate from Broth
0.1 cc.	++	+++	++++	No necrosis	No necrosis	No necrosis
0.2 cc.	+++	++++	++++	No necrosis	No necrosis	No necrosis
0.3 cc.	++++	++++	++++	X	X	X
0.4 cc.	X	X	++++	X	X	X
0.5 cc.	X	X	++++*	X	X	X

* Died on April 26, 1934 (tenth day); marked emaciation.

resulting toxemia. This occurred in the rabbit inoculated with filtrate C.

Control rabbits receiving cutaneous injections of filtrates from a streptococcus cultured from the blebs occurring in a case of erysipelas showed no necrosis. The culture medium passed through the filter produced no reaction in the rabbit's skin. Filtrates from a culture of staphylococci obtained from a furuncle showed no necrotizing properties.

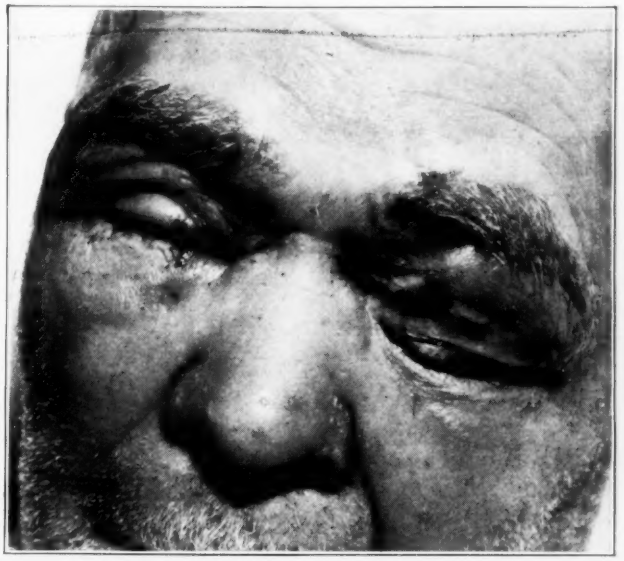

Fig. 4 (case 3).—Destructive ulceration of the upper eyelid developing in the course of the erysipelas.

The lesions resulting from the injection of 0.2 cc. of filtrates A and B were excised for histologic study. Dr. Frank Hall of the pathologic department of the

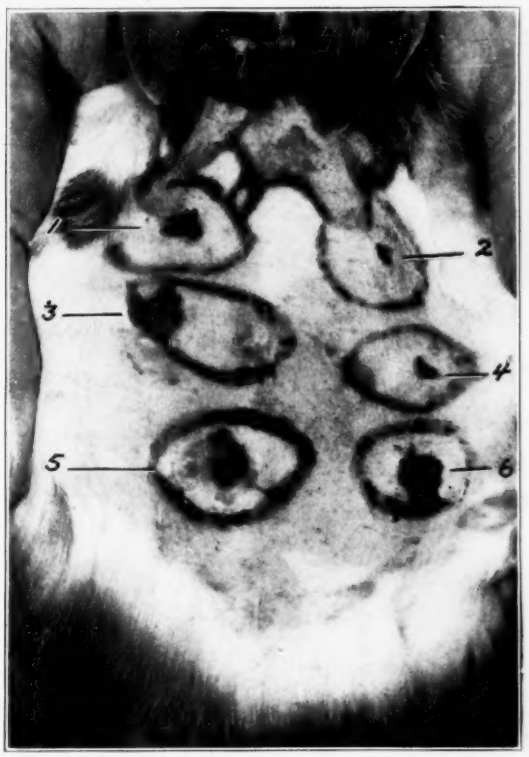

Fig. 5.—Areas 2, 4 and 6 received, respectively, 0.1, 0.2 and 0.3 cc. of filtrate A, obtained from case 2, grown in broth containing dextrose. Areas 1, 3 and 5 received, respectively, 0.1, 0.2 and 0.3 cc. of filtrate B, obtained also from case 2, but grown in dextrose-free broth. Note the inhibiting properties of dextrose on the dermonecrotic properties of the toxin filtrate. Photographed seventy-two hours subsequent to injection.

Kansas City General Hospital furnished the following histopathologic report:

The section marked "infiltrate A" shows subdermal inflammatory reaction of a necrotic character. The entire area involved is necrotic; the cells have undergone marked degen-

7. Fleming, A.: The Staphylococci, System of Bacteriology, Medical Research Council of Great Britain, London **2**: 19, 1929.

erative necrosis. No blood vessels can be made out in this section, so the blood vascular reaction cannot be described. The derma very close to the necrotic area is perfectly normal and shows no peripheral infiltration. The most marked change aside from the necrosis is found in the musculature. The

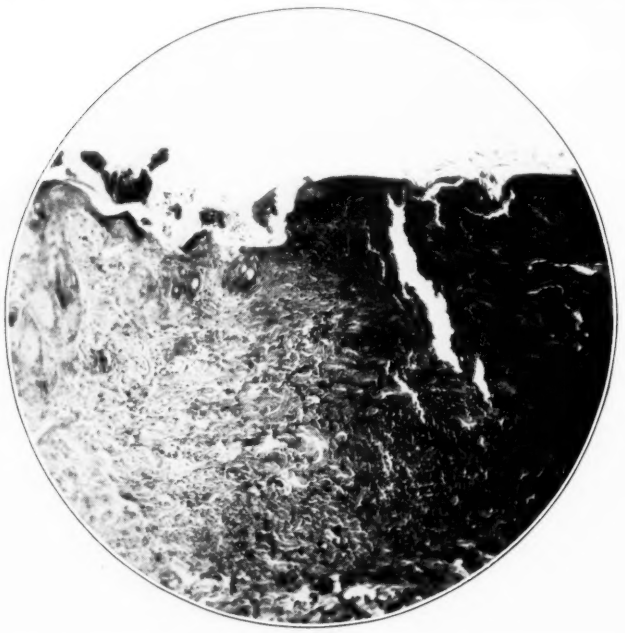

Fig. 6.—Section of rabbit's skin receiving filtrate B intracutaneously. Biopsy done on fourth day following injection. Note the area of necrosis on right without inflammatory reaction.

Fig. 7.—Areas 1, 2, 3, 4, 5 and 6 received, respectively, 0.1, 0.2, 0.2, 0.3, 0.4 and 0.5 cc. of filtrate C obtained from case 3, grown in dextrose-free broth and administered intracutaneously. Death occurred on the tenth day. Note spreading of area 6. This is the most potent staphylococcus filtrate we have obtained. Photographed seventy-two hours after injection.

muscle fibers have undergone complete necrosis and take a deep stain. The fibers have become granular and in some places it looks as though crystalline material has been deposited in the centers of the fibers.

The section marked "infiltrate B" shows changes identical with those found in the "infiltrate A."

Following the injection of this sterile staphylococcus filtrate into the vein of the ear of the rabbit, death occurs in from a few hours to several days, depending on the amount of toxin injected and its potency. Rabbit 2, weighing 2.5 Kg., injected in the ear with 0.4 cc. per kilogram of body weight filtrate A, died five days later. Rabbit 3, receiving 0.45 cc. per kilogram of body weight of filtrate B, lived for eleven days before death occurred. Rabbit 1, receiving 0.9 cc. per kilogram of body weight of filtrate A, died thirteen hours later. Rabbit 6, receiving 2.3 cc. per kilogram of body weight of filtrate A, died fourteen hours later. Control rabbits injected with the filtrates from the broth culture medium showed no unfavorable reaction. Filtrates from a streptococcus cultured from the blebs occurring in a case of erysipelas were nontoxic in intravenous doses of 3 cc. per kilogram of body weight.

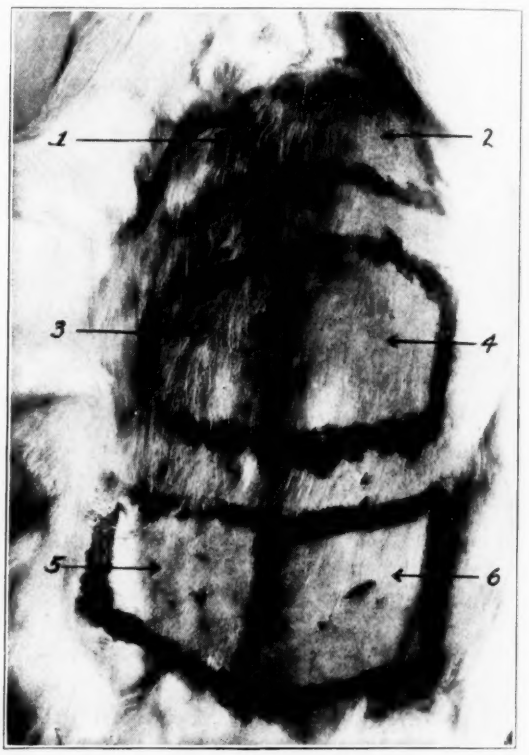

Fig. 8.—In the back of a shaved rabbit, area 1 received 0.1 cc. of staphylococcus filtrate obtained from a furuncle; no ulceration was observed. Area 2 received 0.2 cc. of the same filtrate; no ulceration developed. Area 3 received 0.1 cc. of streptococcus filtrate obtained from the blebs occurring in a case of erysipelas. Area 4 received 0.2 cc. of the same streptococcus filtrate. Areas 5 and 6 were injected with the broth culture medium. The filtrates and culture medium showed no dermonecrotic properties. Photograph made seventy-two hours subsequent to injection.

The postmortem changes subsequent to death from the intravenous administration of staphylococcus filtrate were not striking. On the instance in which death occurred within twenty-four hours subsequent to injection, macroscopic examination showed nothing of note aside from marked pigmentation of the liver. In the instances in which death occurred from three to five days subsequent to intravenous injection, marked emaciation and diarrhea occurred, the fur became rough and food was refused. Dr. Hall furnished the following report of the microscopic examination of the organs of rabbit 6, dying fourteen hours subsequent to injection:

The heart muscle shows alternate dark staining and light staining muscle fibers. The light staining fibers show con-

sible longitudinal fibrillations. The darker muscle fibers show peculiar obliteration of the striations. There is no perivascular infiltration about the blood vessels.

The spleen shows marked acute splenitis. Examination with the high power lens shows the splenic sinuses filled with large histiocytes, many containing granules of blood pigment. The splenic follicles are almost obliterated.

The kidneys show marked passive congestion. There is some swelling of the proximal convoluted tubular epithelium. No casts are found. Many of the glomeruli are quite large and injected with blood corpuscles. There is a considerable amount of congestion of the blood vessels between the collecting tubules.

The liver shows narrowing of the cell columns with considerable blood in the liver sinuses between the cell columns. There is no increase of cells in the liver. The central veins are distended. No change is noted in the portal canal. No round cell infiltration is seen.

COMMENT

Necrotizing ulcers, developing as a complication in the course of erysipelas, are due to a staphylococcus having dermonecrotic properties. The necrotizing factor is contained in a bacteria-free filtrate and is presumably an exotoxin. Administered intravenously, it is lethal to rabbits. The lethal dose varies over a wide range. It depends on the ability of the staphylococcus in question to manufacture toxin. In our experiments the most potent toxin produced death in five days subsequent to the intravenous administration of 0.4 cc. per kilogram of body weight. Larger doses of toxin produced death in as short a period of time as eleven hours. The postmortem examination did not show striking changes if death occurred after a few hours. If the dose of toxin was small, emaciation was marked whether the toxin was administered intravenously or cutaneously. Diarrhea was usually present. In rabbits dying several days later, microscopic evidence of toxic damage to the heart, liver and spleen was noted. Hemolysis in vitro of human blood on blood agar plates is not necessarily a measure of the ability of the staphylococcus to produce free toxin. The intracutaneous injection of 0.1 cc. of this toxin will produce necrosis of a rabbit's skin in thirty-six hours. A culture medium containing dextrose inhibits toxin formation. Filtrates of Streptococcus erysipelatis showed no dermonecrotic properties in the rabbit's skin and were inert when injected intravenously in doses of 3 cc. per kilogram of body weight. Filtrates from a nonhemolytic staphylococcus obtained from a furuncle showed no necrotizing properties although the organism produced yellow pigment. It is interesting to note that the staphylococcus is one of the group of organisms which Wright [8] named serophytes because of their ability to grow freely in unaltered human serum.

Fig. 9.—Section of heart muscle of rabbit 6, receiving 2.3 cc. of filtrate A per kilogram intravenously, showing degenerative changes in heart muscles. Death occurred fourteen hours after injection.

CONCLUSIONS

1. Necrotizing ulcers are occasionally encountered as a complication of erysipelas.
2. The presence of such ulcers enhances the gravity of the prognosis.
3. The ulcers occur in the loose, areolar tissue about the eyes.
4. Necrotizing ulcers complicating erysipelas result from a secondary superimposed infection produced by a staphylococcus possessing the ability to manufacture an exotoxin which is dermonecrotic and hemolytic.

902 Argyle Building.

RESPONSE OF PERITONEAL TISSUE TO DUSTS INTRODUCED AS FOREIGN BODIES

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The response of the body tissues to various kinds of dust has been a subject of much interest in recent years. Mavrogordato, Gardner, Gye and others have conducted experiments on the action of inhaled dusts. Kettle [1] has studied the response to dusts injected into the subcutaneous tissues and intratracheally, and Policard [2] has used the cornea and conjunctiva in his recent studies. In 1924 experiments were begun at the Pittsburgh Station of the United States Bureau of Mines to determine the action and fate of various dusts when injected into the peritoneal cavity of guinea-pigs.[3] The conclusions reached at that time were that live animal tissue in all parts of the body tends to react in essentially the same manner to foreign bodies and that fibrous tissue is formed in the peritoneal cavity by quartz and is not formed by limestone and coal. This paper is a continuation of these earlier studies.

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8. Wright, A. E.: Brit. M. J. **2**: 629, 1915.

From the Office of Industrial Hygiene and Sanitation, United States Public Health Service, and the Pittsburgh Experimental Station of the United States Bureau of Mines.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

Part of the expenses incurred in this study were defrayed by the Metropolitan Life Insurance Company. Mr. W. A. Selvig and Mr. A. H. Emery of the United States Bureau of Mines made the chemical and petrographic examinations of the dusts used in these experiments.

1. Kettle, E. H.: The Interstitial Reactions Caused by Various Dusts and Their Influence on Tuberculous Infections, J. Path. & Bact. **35**: 395-405 (May) 1932. Kettle, E. H., and Hilton, R.: Technique of Experimental Pneumonoconiosis, Lancet **1**: 1190-1192 (June 4) 1932.

2. Policard, A., and Rollet, J.: Réactions du tissu cornéen vis-à-vis des particules minérales siliceuses, Bull. d'histol. applique à la physiol. **8**: 53-58 (Feb.) 1931. Policard, A., and Mouriquand, V.: Sur les réactions provoquées dans le tissu conjonctif par l'introduction de particules microscopiques d'amiante, ibid. **7**: 193-199 (June) 1930.

3. Sayers, R. R.: Health Hazards in the Mining Industry, U. S. Bureau of Mines, Report of Investigation 2660, December 1924.

Owing to the length of time required to obtain a reaction by inhalation methods and the desirability of determining the harmfulness of a dust in a relatively short time, other methods of introducing the dusts to be studied were considered. Injections into the peritoneal cavity seemed to give the most promise, because of the relatively circumscribed area of the cavity, the ease in controlling the amount of the dose, and the preservation of the sterility of the material introduced—a factor to be considered in inhalation and intratracheal methods. The mortality from peritonitis or peritoneal damage following intraperitoneal injection was found to be negligible. Identical reactions were found in each animal injected with the same dust under the same conditions and examined at the same time interval after injection. Therefore the fact that the reaction to the dust involves both epithelial and connective tissue is of no disadvantage.

The reaction is essentially the same microscopically as that produced in the lungs, and the gross appearance

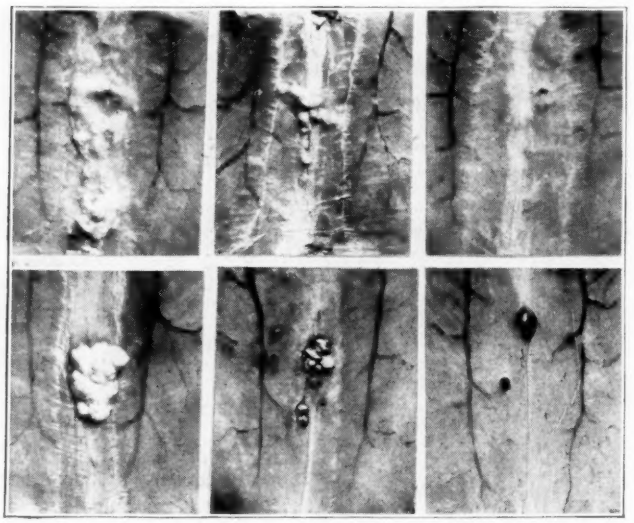

Fig. 1.—Above, calcite; below, limestone. Appearance of nodules on anterior abdominal wall seven, thirty and ninety days after injection.

of the dust nodules is sufficiently differentiated to afford a means of classifying the physiologic response to the dusts. In the series studied here, there were three types of reaction; namely, an absorption or dissolution of the dust, a proliferative reaction, and an inert reaction. In the inert reaction the dust neither caused an increase in the size of the nodules nor disappeared from the tissues; instead there was more or less change in its distribution in the peritoneum. These reactions will be discussed more fully under the different groups of dusts.

PREPARATION OF THE DUSTS FOR INJECTION

It was desirable for the particle size of each dust in the series to conform as closely as possible to that of the other dusts used, and also to be as small as possible without a change in the physical or chemical composition. Particles passed through 100, 200 and 325 mesh standard sieves were used in one series of tests with several dusts.

The 325 mesh size was found to be the most suitable, because of the greater facility with which a reaction is produced. The particles obtained by passing a dust through a 325 mesh sieve were less than 43 microns in size.

In a later series, a Roller type air separator[4] was used. This method of elutriation did not separate all the dusts in the series into fractions of the same size; yet it did produce, with one exception, samples less than 5 microns in maximum measurement. The exception, soapstone, measured 8 microns as a maximum particle size. The median size of the dusts used in this series varied from 0.75 to 1.7 microns, with soapstone measuring 3.5 microns. Such small variations in particle size appeared to be of no importance in comparing the physiologic responses produced by the dusts. It can be readily seen that the air separated particles more closely approximate those inhaled under industrial conditions.[5] While smaller particles were preferable because of their greater assimilation by the cells, the particles that had been passed through a 325 mesh sieve gave the same gross reactions and, in the case of all dusts mentioned in this study, can be used in place of the smaller particles obtained with greater difficulty. Water separation was not attempted, because of the possibility of removing soluble portions of the dusts and thus altering their chemical composition.

TECHNIC OF INTRAPERITONEAL INJECTIONS

A weighed portion of the dust and a few glass beads to facilitate suspension were placed in a small wide mouthed bottle and sterilized in a hot air oven for one hour at 150 C. After cooling, sufficient sterile physiologic solution of sodium chloride to make a 10 per cent suspension was added, the bottle was closed with a sterile rubber stopper, and the whole was thoroughly shaken. Owing to the fact that a suspension of fine dust causes a locking of the plunger of a hypodermic syringe, air-bulb syringes of 3 cc. capacity were used. Needles of 21 or 24 gage were found most suitable for the injections. The needles and syringes were sterilized in boiling water before use.

The hair on the right side of the animals' abdominal wall was clipped and tincture of iodine was applied. For injection, 2 cc. of the 10 per cent suspension, equivalent to 0.2 Gm. of dust, was introduced intraperitoneally into each pig. As the needle was withdrawn, a very small quantity was injected into the subcutaneous tissue to serve as a marker of the site of injection. This marker made it possible to observe whether any trauma was produced by the introduction of the needle into the peritoneal cavity and its effect on the reaction instituted by the dust.

Certain groups of animals were injected with air separated material and other groups with 325 mesh material. The former were killed and examined 7, 14, 30, 56, 90, 180 and 360 days after injection and the latter at intervals of 7, 14, 30, 56 and 112 days after injection.

DISTRIBUTION OF THE DUST IN THE PERITONEAL CAVITY

With the exception of bituminous coal, the greater part of each of the dusts in this series was found in the peritoneum of the anterior abdominal wall, the most dependent portion of the peritoneal cavity. The site of the next largest collection was the omentum. Small nodules and dispersed collections of particles were also found in the inguinal canals, on the mesentery, liver, intestine, testes or uterus and diaphragm. A very little

4. Roller, P. S.: Construction of Accurate Air Separator, Indust. & Engin. Chem. **4**: 341-343 (July 15) 1932.
5. Bloomfield, J. J.: The Size Frequency of Industrial Dusts, Pub. Health Rep. **48**: 961-968 (Aug. 11) 1933.

was occasionally found on the posterior abdominal wall. In the case of bituminous coal, the greater portion was found in the omentum and mesentery, while a relatively small part was present on the anterior abdominal wall. As a basis of comparison in describing the reactions caused by the dusts, the nodules formed on the anterior abdominal wall were used, since they were more accessible and were more constant and uniform in appearance. The response in the omentum or at any other point in the peritoneal cavity was, however, the same as that found on the anterior abdominal wall. Nodules were only infrequently found in the peritoneum at the site of the entrance of the needle—so rarely, in fact, that it was safe to assume that the trauma produced by the introduction of the needle was negligible.

THE PERITONEAL RESPONSE TO THE VARIOUS DUSTS

Calcite.—After being injected into the peritoneal cavity, calcite formed nodules that were irregular and more or less discrete but often clumped. A small amount of congestion and edema was noted about the edges of the nodules in the early stages, but this had subsided before the end of thirty days after injection. This congestion and edema were evidently due to the initial foreign body injury instituted by the dust. The nodules became progressively smaller as the interval between injection and examination increased, and this decrease in size was accompanied by the production of brown pigment particles, which were first noted at the edges of the nodules and later covered their entire surfaces and were found dispersed into the adjacent peritoneum. The original dust eventually disappeared, leaving a small area of fine brown pigment particles at the site of the nodule. These, in turn, soon disappeared without the formation of scar tissue. This type of reaction, namely, the disappearance of the dust from the peritoneal cavity, has been designated, for the sake of description, as one of absorption.

Limestone.—Limestone caused a reaction of absorption similar to that of calcite. The rate in which the dust disappeared from the tissues was much slower than in the case of the purer Iceland spar. In 180 days after injection, practically all of the original dust had disappeared. After 360 days no original dust was present and the amount of brown pigment was materially less than was noted in 180 days. The initial foreign body irritation, the production of the brown pigment and the disappearance of the dust from the peritoneum without the formation of scar tissue was identical with the process produced by calcite.

Precipitated Calcium Carbonate.—Precipitated calcium carbonate produced a tissue response very much like that of calcite and limestone. The formation of the nodules was identical in character, and the original dust disappeared in about the same length of time as in the case of calcite; yet more brown pigment was produced, which lingered in the tissues for a longer time than did that formed by calcite. This increased production of pigment might be attributed to the fact that the dust was in a state allowing easier assimilation by the cells. The pigment particles were much smaller and much more numerous than those produced by either calcite or limestone. No evidence of scar tissue formation was noted in any of the animals examined. The reaction was clearly one of absorption.

Gypsum.—Gypsum eventually produced a response similar to that of calcite. In the early stages the dust appeared to lie inert in the peritoneum without any appreciable change. By the end of thirty days a slight decrease in the amount of dust was noted, and by ninety days this decrease was marked. The nodules became progressively darker as the interval between injection and examination increased, but the production of brown pigment, noted in the other three dusts, was scanty or entirely absent. Fine dust particles, more or less isolated, were noted in the peritoneum. These may have been the remains of nodules or else particles disseminated by phagocytes. The diminution in size of the nodules was not as rapid as in the case of calcite, limestone and precipitated calcium carbonate, yet this response was sufficiently marked to designate the reaction as one of absorption.

Portland Cement.—Portland cement produced a reaction slightly different from that caused by calcite, limestone, precipitated calcium carbonate and gypsum; yet the ultimate outcome appeared to be one of absorption. The initial foreign body irritation was quite severe—

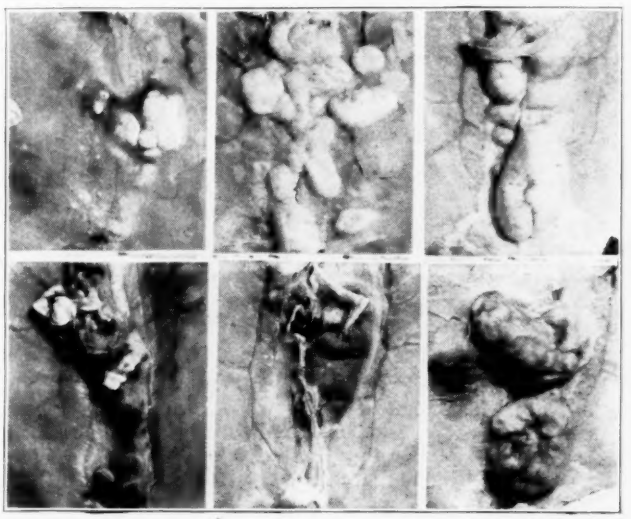

Fig. 2.—Above, quartz; below, chert. Appearance of nodules on anterior abdominal wall seven, thirty and ninety days after injection.

so marked, in fact, that sixteen of thirty-six guinea-pigs injected with this dust died during the tests. This was probably due to the chemical properties of the cement. The animals that survived showed extensive peritoneal congestion and edema in the early stages. After this reaction had subsided, the dust decreased in quantity, with the formation of a light brown pigment, similar to that produced by calcite, limestone and precipitated calcium carbonate. In 180 days after injection practically all of the dust and a large portion of the pigment had disappeared.

Quartz.—After an initial stage of foreign body irritation, manifested by edema and congestion about the collections of dust in the peritoneum, quartz produced nodules that progressively increased in size. These nodules, when occurring in clumps, fused together, forming a large single mass. Numerous capillaries were present on the surfaces and throughout the nodules. The appearance was that of cellular proliferation and was apparently due to the chemical irritation supplied by the solution of the silica in the tissues. The maximum size of the nodules was observed ninety days after injection. After this period they became more firm, contracted and fibrous in appearance. At the end of

360 days this induration was quite marked. This type of reaction, for convenience of description, will be referred to as one of proliferation.

Chert.—Chert caused a reaction similar to that of quartz, though the nodules produced by this dust were larger in size than those formed by the quartz. The color of the nodules, which was the same as that of the dust introduced, remained constant throughout the duration of the tests. The reaction produced by chert was decidedly one of proliferation.

Soapstone.—Soapstone produced the same type of reaction in the first two weeks after injection that was noted in all of the other dusts; namely, an initial foreign body irritation. This early fixation reaction was not severe and subsided quite rapidly. As the time between injection and autopsy increased, the nodules, at first raised and rounded, became flattened and spreading. The edges became irregular, and numerous fine dust particles were noted in the peritoneum adjacent to the edges of the nodules. Collections of these particles were found at various other points in the peritoneum. The amount of dust in the peritoneal cavity found 360 days after injection was approximately the same as that noted in seven days. The injected dust was not absorbed and did not initiate a cellular proliferation. The only change noted was that of the distribution of the dust in the peritoneum. The particles became more widespread in their dispersion as the interval between injection and examination increased, and this dissemination was shown microscopically to have been effected by macrophages. Since no dissolution of the dust or cellular proliferation occurred, this type of reaction will be referred to as one of inertness.

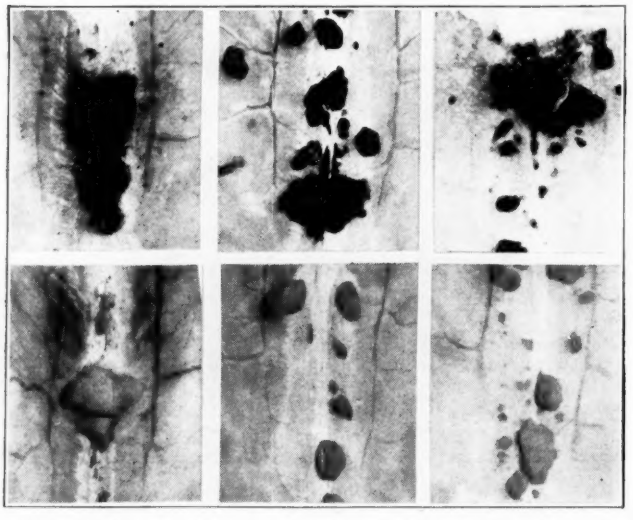

Fig. 3.—Above, anthracite coal; below, jewelers' rouge. Appearance of nodules on anterior abdominal wall seven, thirty and ninety days after injection.

Silicon Carbide.—Carborundum, or silicon carbide, produced essentially the same type of reaction as soapstone. The initial stage of foreign body irritation was not as severe, and the distribution of the fine dust particles in the later stages of the tests were more extensive. Though the nodules became more flattened and spreading, the amount of dust found in the peritoneal cavity 360 days after injection was approximately the same as that noted in seven days. The material is apparently a nonirritating, insoluble foreign body and is readily transported throughout the peritoneum by phagocytes. As no absorption or cellular proliferation was noted, the reaction can be called one of inertness.

Jewelers' Rouge.—Jewelers' rouge, or ferric oxide, behaved in the peritoneum in a manner similar to that of soapstone and silicon carbide. The nodules became flattened, and many fine dust particles were extensively disseminated throughout the peritoneum as the time interval between injection and examination lengthened. The amount of dust observed 360 days after injection was approximately the same as that found in seven days. The response of the peritoneal tissue to this dust is therefore one of inertness.

Anthracite Coal.—Anthracite coal produced a more rapid response than did soapstone, silicon carbide or jewelers' rouge. Minute dust particles were noted in the peritoneum adjacent to the nodules as early as seven days after injection. By ninety days this distribution was quite extensive. In 180 and 360 days the quantity of this dispersed dust was less, though the amount of dust found in the peritoneal cavity was approximately the same as that found in seven days. It was concluded that anthracite coal was inert in reaction.

Bituminous Coal.—Like soapstone, silicon carbide, jewelers' rouge and anthracite coal, bituminous coal appeared to be inert and insoluble in the peritoneum. The nodules behaved in a manner similar to those of the dusts that have been named, and the dispersion of the dust particles throughout the peritoneum was particularly widespread. With this dust very few nodules were found on the anterior abdominal wall, but the majority were consistently found in the omentum. Many small nodules and diffuse areas of dust particles were also found in every portion of the peritoneal cavity. The amount of dust present 360 days after injection was approximately the same as that found in seven days; therefore the reaction was one of inertness.

Precipitator Ash.—Precipitator ash, or "fly ash," produced a reaction similar to that of the other inert dusts mentioned in this series. The nodules behaved similarly in their progress to those formed by soapstone. Relatively coarse, black particles were noted on the surfaces of the dark gray nodules. These were evidently carbon particles, as the dust was of mixed composition. The dissemination of the original gray dust composing the bulk of the sample, while not as extensive as that of the coals, was well marked and was like that noted with soapstone and silicon carbide. As there appeared to be no cellular proliferation or disappearance of this dust from the peritoneal cavity, it seems logical to class this dust as inert in type.

CHEMICAL AND PETROGRAPHIC ANALYSES OF THE DUSTS

Calcite.—Pure Iceland spar was used, chemical analysis of which showed calcium carbonate 99.8 per cent and silica 0.1 per cent. Petrographic examination showed a high purity calcite. The median size of the particles was 1.4 microns.

Limestone.—A high grade Pennsylvania limestone was used. The chemical analysis showed calcium oxide 54.4 per cent, magnesium oxide 0.4 per cent, iron and aluminum oxides 0.4 per cent and silica 1.5 per cent. Petrographic examination showed granular, irregularly rounded calcite. The median size of the particles was 1.45 microns.

Precipitated Calcium Carbonate.—This substance is a chemical by-product. The chemical analysis showed calcium carbonate 87.9 per cent, magnesium carbonate 10 per cent, magnesium oxide 0.1 per cent, iron and aluminum oxides 0.6 per cent, and silica 0.4 per cent. The median size of the particles was 1.28 microns.

Gypsum.—The uncalcined, natural mineral was used. The chemical analysis showed silica 1.3 per cent. Petrographic examination showed approximately 30 per cent as calcite in the form of rounded granules and irregular rhomboidal crystals and approximately 70 per cent as fragmented particles of gypsum. The median size of the particles was 1.3 microns.

Portland Cement.—The chemical analysis of the Portland cement showed calcium oxide 74.4 per cent, magnesium oxide 2.8 per cent, silica 21.1 per cent. Petrographic examination showed normal Portland cement. The particles were sharp and angular. The median size of the particles was 1.05 microns.

Quartz.—Two specimens of quartz were used. One was ground rock crystal of high purity. Chemical analysis showed 99.4 per cent of silica. Petrographic examination showed clear, crystalline normal quartz. The median size of the particles was 1.7 microns. The other specimen was finely ground Pennsylvania quartz, commonly called flint. The chemical analysis showed 99.1 per cent silica. Petrographic examination showed normal quartz of high purity. The median size of particles was 1.6 microns.

Chert.—A highly siliceous chert, the waste product from the concentration of lead and zinc ores, was used. Chemical analysis showed 76.1 per cent silica. Petrographic examination showed quartz and chert, stained with limonite, predominating. About 25 per cent of the silica was normal angular quartz fragments. The median size of the particles was 1.22 microns.

Soapstone.—The chemical analysis of the soapstone showed total silica 49.9 per cent, calcium oxide 1.7 per cent and magnesium oxide 26.2 per cent. Petrographic examination showed about 30 per cent as tremolite, about 65 per cent as talc and about 5 per cent as dolomite. The median size of the particles was 3.5 microns.

Silicon Carbide.—Pure manufactured silicon carbide was used. Petrographic examination showed no impurities. The median size of the particles was 1.15 microns.

Jewelers' Rouge.—The jewelers' rouge was pure ferric oxide in a finely divided state. The chemical analysis showed ferric oxide 98.3 per cent and silica 1.5 per cent. Petrographic examination showed a high purity hematite as fine uniform particles. The median size of the particles was 0.95 micron.

Anthracite Coal.—Two specimens of Pennsylvania anthracite were used. The chemical analyses were approximately the same. Petrographic examinations showed about 95 per cent as coal and about 5 per cent as inorganic material. Of the latter, about 60 per cent appeared as quartz and about 40 per cent as calcite, siderite and rutile. The median sizes of the particles were 0.75 and 1.11 microns, respectively.

Bituminous Coal.—Two samples of Pennsylvania bituminous coal were used. Chemical analyses showed one to have 8.5 per cent ash of which 0.8 per cent was silica, and the other to have 8 per cent ash of which 3.5 per cent was silica. The median sizes of the particles were 1.15 and 1.19 microns.

Precipitator Ash.—The precipitator ash was collected from stacks by electrical precipitation. Chemical analysis showed 44.7 per cent silica. Petrographic examination showed predominantly perfectly spherical fused glass, rounded semifused masses made up of crystallites, some quartz fragments, calcite and coal. The median size of the particles was 1.43 microns.

CONCLUSIONS

The tissue of the peritoneal cavity responds actively to a dust introduced as a foreign body, and this response is of such a character that it may be used as a basis for the classification of industrial dusts with reference to their pneumoconiosis producing properties. This response falls into three groups; namely, one of absorption, one of proliferation and one of inertness. While, in these experiments, animals were kept on test for as long as 360 days, the response is sufficiently well marked in ninety days to determine the type of reaction, and often conclusions can be reached in thirty days, particularly if the reaction is one of absorption or proliferation. The reaction elicited by each dust was constant and uniform in all the animals injected with that dust. The experiments of long duration reported here confirm the results noted in a previous paper.[6] It appears that this response of the peritoneal tissue to various dusts can be used as a test to determine the possible harmfulness of an industrial dust.

ABSTRACT OF DISCUSSION

DR. A. J. LANZA, New York: At a time when the subject of the possible effects of industrial dust is of paramount importance, it is refreshing to see a clear-cut piece of laboratory work. The authors inject the dust intra-abdominally, and the results in the case of silicious dust are in conformity with what would be expected from a knowledge of the clinical picture of the action of these dusts in the pulmonary tissues of human beings. This marks, I hope, the beginning of a series of such experiments, which will give industrialists and physicians information as to whether or not any dust present in working operations has characteristics of harmful nature. The advantage of this method is that it does not take the length of time that is spent in the artificial inhalation dusting of experimental animals, which not infrequently has to be carried on for from three to even five years. In this case the results are obtained within weeks or a few months.

DR. WILLIAM D. MCNALLY, Chicago: Was a histologic study of the specimens made in the calcium experiment? There is an area extending farther than the calcium, and I can't quite agree that there is no change, because the area appears abnormal when compared with the surrounding peritoneal tissue. An area of normal tissue is present and, further, a white area that looks as if there was a calcium soap being formed. Similar pictures are seen in disease of the pancreas, in which there are erosions of the peritoneum and depositions of a calcium soap. If that should happen in the small alveoli of the lung with calcium, definite damage would occur. I should like to have that explained.

DR. E. R. HAYHURST, Columbus, Ohio: The study is a decided advance in available methods of estimating diagnosis and prognosis in industrial dust work. I do not believe, however, that such studies will answer all questions in relation to the harmfulness of so-called nonpoisonous dusts. I have seen dusts that were 99 per cent silica, which, because of peculiar physical properties, would not remain suspended in the air so that they could be inhaled, at least in amounts that would be likely to get beyond the normal nasal dust trap. Therefore, the testing of a "proliferative" dust by this method would not necessarily mean that it might damage the lungs in industrial

6. Miller, J. W., and Sayers, R. R.: The Physiological Response of the Peritoneal Tissue to Dusts, Pub. Health Rep. **49:** 80-89 (Jan. 19) 1934.

exposures. May I ask what kind of tissue forms over these dust particles when they are inert or absorbed? I can understand the reaction in the proliferative type, but it seemed to me that the first two would also cause some sort of reaction, which might be seen microscopically if not in the specimens shown in the display in the Scientific Exhibit.

DR. JOHN W. MILLER, Washington, D. C.: Microscopic sections of the pigmented remains of calcite nodules showed a larger number of fat cells than did the other portions of the peritoneum. I did not find any calcium in these sections by staining methods. Both Dr. Gardner and I think that the pigment is possibly of hematogenous origin; some of these particles responded to an iron reaction and some did not. In answer to Dr. Hayhurst's question, a thin capsule was noted over the dust nodules of the inert-reaction group, but the dispersion of particles was a characteristic feature in the peritoneum. These particles were engulfed by macrophages, which fact was particularly well illustrated in the case of carbon particles. This is a preliminary paper, reporting only a portion of the study.

CLINICAL CIRCULATORY EFFECTS OF DINITROPHENOL

A. B. STOCKTON, M.D.
AND
W. C. CUTTING, M.D.
SAN FRANCISCO

During the clinical use of sodium dinitrophenol (1-2-4) in obese patients, the occasional appearance of subjective symptoms such as tachycardia, dyspnea and profuse diaphoresis [1] suggested the necessity of investigating the effects of the drug on the circulation.

Thirteen patients with apparently normal cardiovascular systems were selected for this study. Six of the group were placed at bed rest in the hospital, and control observations of blood pressure, pulse rate, vital capacity and venous pressure made regularly at 8 a. m., 2 p. m. and 7 p. m. The control period was continued until at least three consecutive results were in close agreement. A mean of three or more control results

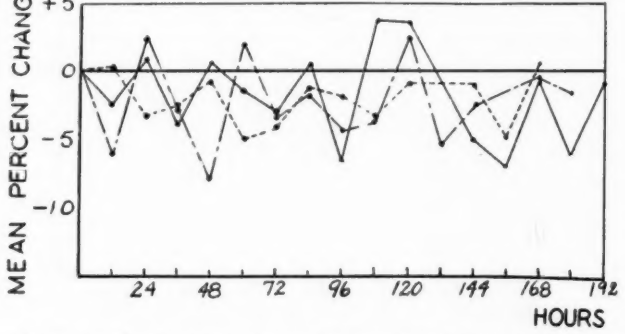

Chart 1.—Mean per cent changes in systolic and diastolic blood pressures, and in vital capacity of thirteen patients following the daily oral administration of 300 mg. of sodium dinitrophenol. Solid line, systolic pressure; line of dots and dashes, diastolic pressure; broken line, vital capacity.

was taken as the base. The control period was never less than three days and was sometimes as long as five days. A quantity of 300 mg. of sodium dinitrophenol was then administered orally in three divided doses each day, and the circulation and vital capacity were observed for from four to twelve days.

The ambulatory patients were treated in a similar manner, except that the same functions were observed once daily at 4 p. m. Before the observations were made, the patient was required to rest in a prone position without pillows for one hour.

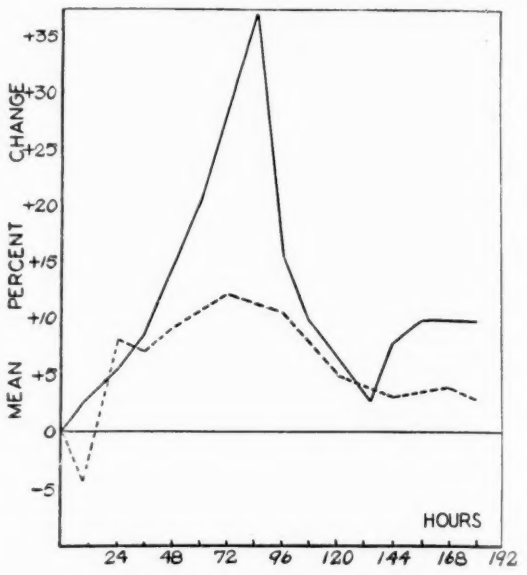

Chart 2.—Mean per cent changes in pulse rate and venous pressure of the same group of patients. Solid line, venous pressure; broken line, pulse rate.

Blood pressure readings were taken by the same observer, using a standardized mercury manometer. The pulse rate was counted for three full minutes, with intervals of five minutes between the counts, and an average used. Vital capacity was measured by means of a Collins spirometer, the average of three different trials being used. Venous pressure changes were measured by a direct method suggested by Dr. William Dock and described by Rytand.[2] In this method an intravenous needle inserted into the median cubital vein is connected by means of a Kauffman-Luer syringe to a water manometer. The readings were made only after a period of three or more minutes without change in the level of the manometer. The results obtained are presented as curves in the accompanying charts showing changes in the different physiologic functions observed.

RESULTS

Vital capacity and systolic and diastolic blood pressure were not significantly affected by the sodium dinitrophenol. Most of the individual variations fell between 10 per cent above and 10 per cent below the control level (chart 1).

Definite increases in venous pressure and in pulse rate occurred in ten of the thirteen cases studied. These increases showed much fluctuation. The individual variation in pulse rate was between —11.6 per cent and + 30.1 per cent, and in venous pressure between —16.9 per cent and + 49.5 per cent (chart 2).

The concurrent increases in pulse rate and venous pressure explained the maintenance of normal blood pressure in spite of the marked peripheral vasodilatation resulting from the dinitrophenol. Patients stated that the sensation of warmth and the sweating occurred

From the Departments of Pharmacology and of Medicine, Stanford University School of Medicine.

Supported in part by a grant from the Rockefeller Fluid Research Fund of the Stanford University School of Medicine.

Read before the Society for Experimental Biology and Medicine, Pacific Coast Branch, at the American Association for the Advancement of Science, Berkeley, Calif. June 21, 1934.

1. Tainter, M. L.; Stockton, A. B., and Cutting, W. C.: Use of Dinitrophenol in Obesity and Related Conditions, J. A. M. A. **101**: 1472 (Nov. 4) 1933.

2. Rytand, D. A.: The Effect of Digitalis on the Venous Pressure of Normal Individuals, J. Clin. Investigation **12**: 847 (Sept.) 1933.

in waves likely to be excited by exertion, by a warm, humid atmosphere, or by drugs causing peripheral vasodilatation, such as acetylsalicylic acid or alcohol. In patients under observation during these periods of vasodilatation, maximum increases in venous pressure and in pulse rate were demonstrated. Chart 3 shows the results obtained in patient M, which were characteristic for other patients. Despite the variability in all observations, it was quite evident that, while no significant changes occurred in blood pressure and in vital capacity, there were definite increases in pulse rate and in venous pressure.

Observations by one of us (S.) of blood pressure and pulse rate changes in a separate and larger group of seventy-five ambulatory patients indicated that there was an ultimate reduction in both systolic and diastolic pressures. These reductions were probably due to loss of body weight, since they persisted after the dinitrophenol had been discontinued. However, these observations are being extended in a larger number of ambulatory patients in order to determine the significance of the changes. A considerable time must elapse before results on several hundred patients are obtained and prepared for publication.

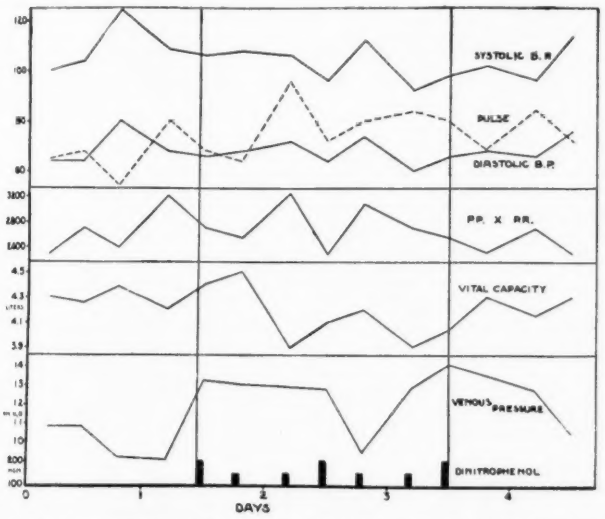

Chart 3.—Consecutive actual changes in blood pressure, pulse rate, vital capacity and venous pressure in patient M, receiving daily therapeutic doses of sodium dinitrophenol. First segment, blood pressure changes represent millimeters of mercury; pulse, pulse rate per minute. Second segment, P. P. × P. R. = pulse pressure times pulse rate.

CONCLUSIONS

The oral administration to resting patients of sodium dinitrophenol in therapeutic doses, during short periods of time, caused no significant changes in vital capacity and in blood pressure.

There were significant increases in pulse rate and in venous pressure. These increases persisted during the medication and were maximum during the periods of peripheral vasodilatation caused by the drug.

Intracranial Aneurysm.—In 1923, Symonds reported five cases of intracranial aneurysm in which the diagnosis was made during life. In two of his cases the diagnosis was confirmed by necropsy; in another case the necropsy was incomplete, and in the remaining two the patients were still living. This report served as the turning point from the time-honored tradition that an exact diagnosis of intracranial aneurysm was impossible during life. During the past few years several other papers have appeared containing the reports of cases in which a definite clinical diagnosis was established.—Garvey, P. H.: Aneurysms of the Circle of Willis, *Arch. Ophth.* **11**:1032 (June) 1934.

THE FATE OF THE "GOOD CHRONIC" CASE OF TUBERCULOSIS

A YARDSTICK FOR THE RESULTS OF THORACOPLASTY

LAWRASON BROWN, M.D.
SARANAC LAKE, N. Y.
AND
HOMER L. SAMPSON, D.Sc.
TRUDEAU, N. Y.

Prof. Edward Archibald of McGill University, in describing the patients on whom he has performed the operation of thoracoplasty, has made use of the term a "good chronic" case of pulmonary tuberculosis, suggested to him, he states, by Brunner in his analysis of the operations of thoracoplasty performed in Sauerbruch's clinic. All patients coming to this severe operation have evidently well advanced cases of pulmonary tuberculosis, almost invariably with cavitation. The results obtained from thoracoplasty in this "good chronic" group are far better than those obtained in other groups, and in order to evaluate these results it becomes necessary to ascertain the results in a similar group in which no operation has been performed. Obviously the term "good chronic" implies the converse "bad chronic," and further study has brought out that an intermediate group, a group passing or slipping from the "good" to the "bad" chronic state, was of considerable importance in connection with the surgical treatment of pulmonary tuberculosis.

It is highly necessary to define what these terms imply. The criteria for a "good chronic" case are as follows: A cavity at least 2 cm. and usually larger in diameter must be present. The general condition must be favorable. The temperature and pulse must be normal during the period of observation of several months. The appetite and strength must be good and the patient must sleep well and be able to take some exercise. Expectoration may be present but must not be excessive. The number of tubercle bacilli in the sputum is not taken into consideration. Apart from the fact that the roentgenogram is used to detect or confirm the presence of cavity, the criteria are wholly clinical. Patients not conforming to these criteria would have to be classified as "bad chronics," but it soon became evident that the latter group was a broad one embracing many patients slipping from the better to the worse group. For this reason we think it best to recognize a "slipping" or intermediate group. We do this for the reason that in our opinion, patients in the "bad chronic" group do not as a rule respond any too favorably to surgical treatment. The patients most suitable for surgical intervention, if it is accepted that the "good chronics" do well in many instances without such treatment, are those slipping back from the "good chronic" group toward the "bad chronics."

In order to determine what happens to "good chronic" cases we studied 336 patients at the Trudeau Sanatorium (table 1) and forty-seven patients treated in the village of Saranac Lake. We noted the condition of the patients at the end of five and when possible at the end of ten years. Few of these patients received any form of surgical treatment and if so they did worse than those who received none. At the end of five years 80 per cent of the "good chronics" among the Trudeau patients were alive and only 38 per cent of the "bad chronics." Of the "good chronics" 54 per

cent were at work and of the "bad chronics" only 12 per cent. At the end of ten years the figures are, for the "good chronics," 64 per cent alive and 52 per cent at work; for the "bad chronics," 25 per cent and 11 per cent, respectively. The "good chronics" do remarkably well and their conditions show little change in the number working at the end of ten when compared with those at the end of five years. During the first three years 14 per cent of the "good chronics" and 50 per cent of the "bad chronics" die, while at the end of five years the figures are respectively 19 per cent and 63 per cent and at the end of ten years 32 per cent and 75 per cent.

TABLE 1.—*Sanatorium Cases*

"Good Chronics," 205						"Bad Chronics," 131					
5 Years			10 Years			5 Years			10 Years		
Working	Not Working	Dead	Working	Not Working	Dead	Working	Not Working	Dead	Working	Not Working	Dead
111	53	41	107	28	70	16	33	82	14	18	99
54%	26%	20%	52%	14%	34%	12%	26%	62%	11%	14%	76%

TABLE 2.—*Saranac Lake Cases*

"Good Chronics," 24 5 Years			"Bad Chronics," 23 5 Years		
Alive	Unknown	Dead	Alive	Unknown	Dead
11	6	7	5	1	17
46%	25%	29%	22%	4%	74%

TABLE 3.—*Death According to Year in Percentage*

Year	"Good Chronics"		"Bad Chronics"	
	Deaths	Percentage	Deaths	Percentage
1	8	4	44	34
2	9	4+	9	7
3	13	6+	12	9
4	6	3	8	6
5	5	2+	9	7
6	11	5+	8	6
7	7	3+	2	1+
8	3	1+	1	1
9	4	2	2	1+
10	4	2	4	3

TABLE 4.—*Classification of Sanatorium Cases*

	Moderately Advanced	Moderately Advanced to Far Advanced	Far Advanced
205 good chronics	59	28	13
131 bad chronics	42	27	31

TABLE 5.—*Comparison of the Results of Medical and Surgical Treatment in "Good" and "Bad" Chronics*

	Treatment	Time Elapsed in Years	Living	Dead	Working
205 good chronic	Medical	5	80	20	54
41 good chronic	Surgical (thoracoplasty)	0-10	85	15	
131 bad chronic	Medical	5	38	62	12
52 bad chronic	Surgical (thoracoplasty)	0-10	48	52	
266 effective artificial pneumothorax	Surgical	4-13	87.2	72.7	56.4
249 ineffective artificial pneumothorax	Surgical	4-13	25	75	5.6
142 thoracoplasty	Thoracoplasty	0-10	64	36	26

The figures for the small group of Saranac Lake cases show little differences, as can be noted from the accompanying tables.

From the figures at our command[1] we have been able to construct table 5, showing a comparison of the results of medical and surgical treatment in "good" and "bad chronics." The difference between the results of treatment in these two groups is very striking. Attention should be drawn to the very poor results obtained from ineffectual artificial pneumothorax.

It is of considerable interest that the figures recently collected by Hedblom show little difference from those collected some years ago by Alexander and published in his book on thoracic surgery. Roughly, one third of the cases are economic recoveries, one third of the patients are alive and one third of the patients are dead. We feel that in the future the thoracic surgeons in reporting their results should divide their cases into these three or other similar groups.

Clinical Notes, Suggestions and New Instruments

HYPERTHYROIDISM IN CHILDREN

CLARENCE K. JONES, M.D., CHICAGO

Hyperthyroidism in children is a rather rare disease. Occasionally a single case is reported, but most of the cases have been reported from the larger clinics. Dinsmore[1] of the Cleveland Clinic reported forty-eight cases in patients ranging up to 17 years of age, while Helmholz[2] reported thirty from the Mayo Clinic. Greene and Mora[3] from Richter's service reported twenty-six cases in their series, the ages ranging from 8 to 16 years inclusive. This represented 2.1 per cent of their 1,200 consecutive cases that came to operation. Twenty-two of these patients were girls and four were boys. One child, a girl, was 8 years old, two were 11, and one was 12; the rest of the patients were fairly evenly scattered over the next four year period. Cowden, reviewing the literature in 1923, found no case of hyperthyroidism in a boy under 10 years of age.

The symptoms in the cases cited were manifested for from two months to three years, the average being nine months. In Helmholz's series, tachycardia was noticed in all his thirty cases. Enlargement of the thyroid gland and nervousness were present in twenty-eight of the cases. Exophthalmos was a symptom in twenty-five. Loss of weight was noted in about half of the cases reviewed. Tremor, weakness, excessive appetite and free sweating were usually present.

From the foregoing it may be seen that the clinical picture of hyperthyroidism in children closely resembles that of the adult. The reason the loss of weight is not noticed in a greater number of cases is probably that the child is normally gaining several pounds annually at this age and that the toxicity from the hyperthyroidism is just about enough to offset the normal gain. In one case reported by Greene and Mora the gain was 7 pounds (3,175 Gm.) in spite of the toxic thyroid.

Exciting factors were noted in several of the cases reviewed, such as tonsillitis, influenza, scarlet fever, colds and whooping cough.

The metabolic rate in Greene and Mora's series averaged 34.6 plus in 2.6 readings per child, the extremes being plus 86 and plus 13, the latter patient having been on iodine for seven

1. We are indebted to Dr. J. N. Hayes and Dr. E. N. Packard for permission to use figures from their forthcoming book on artificial pneumothorax.

Read before the North Shore Branch of the Chicago Medical Society, March 6, 1934.

1. Dinsmore, R. S.: Hyperthyroidism in Children, Surg., Gynec. & Obst. **42**: 172 (Feb.) 1926.
2. Helmholz, H. F.: Exophthalmic Goiter in Childhood, J. A. M. A. **87**: 157 (July 7) 1926.
3. Greene, E. I., and Mora, J. M.: Thyroidectomy for Thyrotoxicosis in the Young, Surg., Gynec. & Obst. **53**: 375 (Sept.) 1931.

weeks. Helmholz obtained readings varying from plus 11 to plus 55.

In most of the cases reviewed, iodine was given prior to operation, by far the greater number of cases reacting favorably to the medication. Helmholz stated that one of his cases showed no reduction in the metabolic rate after several weeks of compound solution of iodine.

The amount of thyroid tissue left at operation is usually greater than that left in the adult. It is ordinarily considered good surgery in the adult to leave no more thyroid gland than a piece equal to about the size of the distal phalanx of the thumb on the posterior capsule, while it is the opinion of most surgeons today that three or four times that amount should be left in the child. Lahey[4] states that he prefers to do his operations on preadolescent thyroids in two stages with intervals of six weeks. However, it must be remembered that Lahey operates on most of his adult patients in two stages. Dinsmore felt it desirable to ligate the superior thyroid vessels some three months prior to the thyroidectomy.

At the Mayo Clinic there were two deaths following twenty-four operations; Greene and Mora had no fatalities in their series of twenty-six cases. Dinsmore fails to mention the mortality from the Cleveland Clinic. Recurrence was more common than in adult cases, but this may be accounted for by the necessity of leaving more thyroid tissue.

The following is a case of toxic thyroid:

REPORT OF CASE

L. C., a white boy, aged 10 years, brought to my office, June 2, 1928, complained of loss of weight, malaise, nervousness, inability to do school work, frequent bowel movements, and headaches.

The family history was negative except for the fact that I had operated on the father for hyperthyroidism, April 17, or about two weeks before examining this boy.

The patient had had measles, mumps, whooping cough, chickenpox and tonsillitis. Tonsillectomy and adenoidectomy had been performed six years before. Six weeks before admission he had an acute cold with sore throat. The history further showed that shortly after the onset of this cold the present symptoms were first noticed.

The patient was frail, nervous, pale and emaciated; he weighed 68 pounds (30.8 Kg.), a loss of 10 pounds (4.5 Kg.) over a six weeks period. Tremor of the fingers was present and bilateral enlargement of the thyroid gland, especially of the right lobe. The pulse was 124; the hands were clammy and damp with perspiration. There was a slight bilateral exophthalmos, with some nystagmus. There was increased cardiac dulness, measuring 9 cm. to the left of the midsternal line. The urine showed a trace of albumin and a few leukocytes. Examination of the blood showed: hemoglobin, 80 per cent; red blood cells, 4,660,000; white blood cells, 11,200; differential count, normal; basal metabolic rate, plus 38.

The patient was put to bed with absolute rest, forced feeding with four feedings daily, and compound solution of iodine, 3 minims (0.18 cc.) three times a day. During the next two months the pulse varied from 110 to 130. All other subjective and objective symptoms showed little or no change during this rest period of more than two months, so the patient was sent to St. Lukes Hospital for observation and treatment.

On admittance to the hospital the basal metabolic rate was plus 40, or an increase of two points over the test made more than two months before, in spite of the fact that he had been on iodine continuously and in bed during the entire period. The blood picture was practically unchanged and examination of the urine was negative.

After a few days rest and observation, an operation was decided on, and on August 17, or about two and one-half months after the initial visit, a thyroidectomy was done under gas anesthesia. Most of the right lobe was removed and about two thirds of the left. The wound was closed with a subcuticular stitch without drainage. The patient had a stormy time during the first four days after operation, the pulse varying between 140 and 168, but by the fifth day it had dropped to 84. Iodine was continued daily, 5 minims (0.3 Gm.), during this period. The boy left the hospital ten days after the operation, at which time he was feeling fine, the pulse averaging about 80.

The pathologic report showed extensive hyperplasia of the thyroid alveoli with lymphocytic infiltration, only a few of the alveoli containing normal colloid material.

A metabolic test taken two months after operation gave a reading of minus 11. The weight was 84 pounds (38 Kg.) and the pulse 73. All other subjective and objective examinations were negative. Periodic check ups have been made over the last five years, and to date there has been no return of symptoms, the boy developing into a normal young man of average weight and with a stable nervous system.

122 South Michigan Avenue.

4. Lahey, F. H.: Primary Hyperthyroidism in Children, S. Clin. North America **9**: 1327 (Dec.) 1929.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by the various members are incorporated in the final draft prepared for publication. The series of articles will be continued from time to time in these columns.*—ED.

THERAPY OF ANTHRAX

The diagnosis is given under Carbuncle.

PROPHYLAXIS IN ANIMALS

The carcass of an infected animal, which must not be skinned or opened, should be destroyed by burning, if possible, or otherwise by thoroughly covering with powdered unslaked lime and burying it, at least 6 feet deep, in an unfrequented fenced-off place. Ground contaminated with discharges should be burned over. If the animal dies in a stable, everything contaminated must be disinfected and, if possible, burned.

Animals should be protected by not being permitted to graze on land known or suspected to be infected, and being kept during an outbreak from exposure to all insects that may act as carriers, until the animals are immunized.

Combined active and passive immunization should be accomplished by subcutaneous injection of antiserum and of vaccine. Immunity is acquired in ten or twelve days and lasts for at least a year.

PROPHYLAXIS IN MAN

Workers who handle suspected material, such as hides or wool, should be compelled to wear gloves and overalls while handling it. Three rooms should be provided for these workers: one in which they leave their work clothes; a second room, a lavatory in which they must cleanse the hands, face and other exposed parts thoroughly, paying special attention to keeping the finger nails clean; and a third room where they have left their street clothes. Wool sorters should be protected against possibly infected dust by wearing masks.

Slight abrasions and even small pimples should receive prompt treatment, and antiserum should be employed on mere suspicion of infection.

TREATMENT

Anthrax antiserum should be administered at the earliest possible moment, locally as well as systemically.

Local injection is done after iodinization of the skin surrounding the lesion, from 10 to 12 cc. of the serum being injected through two or three punctures just outside the indurated border of the lesion and rather deeply (from 1 to 1½ inches) into the subcutaneous tissue at the base of the induration, in such a way as to circumscribe the lesion. Injections are repeated at intervals of twenty-four, twelve or, in severe cases, of six hours, until from four to six injections have been given or, rather, until the inflammation, which is increased after the first few injections, shows definite evidence of subsiding.

Systemic administration in nonsepticemic cases is carried out by means of intravenous injections of 50, 100 or 200 cc. of antiserum every twelve to six hours (according to the severity of the case) until the disease is controlled; then intramuscular injections are given for several days longer.

In septicemic cases, i. e., those presenting a positive blood culture, 200 cc. of antiserum is injected intravenously every three hours until the blood culture is negative.

Local treatment consists of absolute rest, elevation, and warm boric acid compresses until the eschar separates. No excision or cauterization is necessary. If an abscess forms, mere incision is enough. In properly managed cases the wound heals with a surprisingly small scar.

The fever regimen (q. v.) is followed.

Council on Physical Therapy

THE FOLLOWING ARTICLE HAS BEEN ADOPTED BY THE COUNCIL ON PHYSICAL THERAPY AND THE COMMITTEE ON STANDARDIZATION AND DRUGS[1] OF THE SECTION ON OPHTHALMOLOGY OF THE AMERICAN MEDICAL ASSOCIATION. H. A. CARTER, Secretary.

A PRACTICAL COMPARISON OF SOME INSTRUMENTS USED IN ORTHOPTIC TRAINING

GEORGE P. GUIBOR, M.D.
CHICAGO

Because of the large number of instruments offered for the training of the fusion faculty in cases of squint, it would seem to be of value to discuss the indications for the use of some of these instruments and the results to be obtained.

These instruments may be classified according to their construction into:

1. Instruments depending on the use of prisms to produce the superposition of images.
2. Instruments depending on the reflection by mirrors to produce the superposition of images.
3. Combinations of 1 and 2.
4. Instruments depending on the projection of light forms on a screen to produce the superposition of images.

From the Department of Ophthalmology, Northwestern University Medical School.

1. The members of the Committee on Standardization of Instruments and Drugs are Dr. Sanford R. Gifford, Chicago, chairman; Dr. Francis Heed Adler, Philadelphia; Dr. Clifford Walker, Los Angeles; Dr. Jonas Friedenwald, Baltimore, Md., and Dr. John MacNie, New York City.

The following list includes most of the instruments employed in the United States and England:

I. Prism refracting instruments:
- (*a*) Stereoscope:
  1. Standard stereoscope (made in various models).
  2. Variable prism stereoscope.
  3. Training stereoscope.
  4. Kinetic stereoscope.
  5. Telebinocular.
  6. Stereophorometer.
  7. Kratometer.
  8. Phoriascope.
  9. Stereocampimeter.
  10. Correct-eyescope (made especially for drawing).
- (*b*) Normalizer.
- (*c*) Panocular.

II. Mirror reflecting instruments:
1. Cheiroscope.
2. Amblyoscope.
3. Synoptiscope.
4. Synoptophore.
5. Stereo-orthoptor.
6. Orthoptoscope.

III. Combinations—stereocampimeter with mirror attachment.

IV. Projection of light in screen—myologic unit.

In using any of these instruments, several facts must be remembered. First, no instrument, even if it is advertised as an automatic training device, will replace personal supervision and hard work in the training of fusion, the checking of progress and the determining of suppression. Second, all instruments have defects and limitations which are apparent only after orthoptic training has been attempted over a period of time with such equipment. Third, as the instrument becomes more technical and mechanical it requires more personal supervision and its practical uses can be less easily varied to suit individual cases. Fourth, the tendency to make use of elaborate and psychologically impressive instruments should be discouraged unless such equipment accomplishes definite results not obtainable with more simple apparatus.

As types of prism deflecting instruments, the ordinary Brewster or Holmes stereoscope or its modifications as listed are all valuable instruments. The simple hand stereoscope, as well as its more expensive modifications, appears to answer most of the requirements given for an efficient instrument. By varying the illumination and using large colored pictures before the suppressed eye, or by drawing pictures in the stereoscopes adapted for this purpose, it is usually possible to overcome suppression.

By the use of prisms, cases of squint of the accommodative type of as much as 35 degrees may be made to fuse with the stereoscope. By varying the distance between charts and reducing the amount of prism necessary to superimpose the images and later substituting prisms of opposite sign which call for more muscular effort, all the various steps in orthoptic training may be accomplished with the stereoscope. With the stereoscope, much depends on the type of card employed. With the split charts, which contain a few simple objects in marked stereoscopic relief and in which the distance between charts may be varied, such as those of Sattler and the author, it is surprising how often patients with squint of long standing will fuse at the first or second attempt.

In divergent squint, however, of an amount greater than 20 degrees, the use of the stereoscope is usually impossible until necessary surgical procedures have been performed to reduce the angle of squint.

With the many cards at one's disposal, the routine can be made so variable and stimulating that young children will cooperate and enjoy the exercises for as long as an hour. Parents can learn the use of the stereoscope readily and can cooperate in home training.

Objective methods for checking subjective or psychologic reactions have been formulated.[1] The cost of this instrument is exceedingly small.

The objections to the small hand stereoscope are that there is some prismatic distortion at times, that it is limited to squint of 35 degrees, or less, depending on the type of squint, and that no kinetic or rotatory stimulus can be produced with this rigid instrument.

As a type of mirror reflecting instrument, the one most commonly employed is the amblyoscope of Worth (and its modifications the synoptophore and the synoptiscope). This instrument has both diagnostic and therapeutic uses. It may be used to diagnose the degree of squint, normal or abnormal correspondence as well as the fusion ability. It is easily movable. With the more recent stereoscopic charts, and if variation of light is utilized, stereoscopic ability may be well trained and may be maintained during the building of fusion amplitude and duction. No prismatic aberration is present. It may be be used to train vertical imbalances. The cost of this instrument is modest. It seems important to emphasize the advantages of the synoptophore and synoptiscope in that cyclophorias may be diagnosed and partially overcome with these instruments. The variation of the illumination in these instruments is accurately gaged.

The disadvantage of the amblyoscope is that few stereoscopic charts applicable to it are available at the present time, so that variability in routine is difficult to secure. Until more stereoscopic charts are available, one can seldom depend on the amblyoscope entirely for fusion and duction training. More charts are available for the synoptophore and synoptiscope. These instruments, however, are large and expensive and will probably find their use chiefly in institutions where large numbers of patients are being trained.

As regards the more elaborate instruments in which the principle of fusing moving objects is employed, a few words are necessary. It has been my experience that most patients stimulated to overcome suppression by these instruments can do so with one of the more simple instruments, employing mirrors or prisms. It does not seem to have been proved that fusion of the moving targets in these elaborate instruments has a marked effect on the muscles and the fusion sense superior to that obtained by overcoming prisms of varying degree in the ordinary type of duction training with the stereoscope or amblyoscope.

The assertions that such instruments overcome amblyopia more rapidly than may be done with other means certainly rest on no foundation whatever, in my opinion. No instrument will take the place of prolonged monocular occlusion and atropinization for this purpose, the effect of the latter procedures being limited to a certain percentage of cases, and chiefly to those seen at an early age.

1. Guibor, G. P.: Some Possibilities of Orthoptic Training, Arch. Ophth. **11**: 433 (March) 1934.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DEXTROSE (See New and Nonofficial Remedies, 1934, p. 270, and THE JOURNAL, April 7, 1934, p. 1154).

The several accepted dextrose solutions and dextrose in physiologic solution of sodium chloride, marketed in Vacoliter Containers, are also supplied in Half-Size Vacoliter Containers.

DIPHTHERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1934, p. 393).

E. R. Squibb & Sons, New York.

Refined Diphtheria Toxoid Alum Precipitated-Squibb (See THE JOURNAL, Feb. 24, 1934, p. 605).—Also marketed in packages of ten 0.5 cc. vials, representing ten immunizing doses.

BUTYN (See New and Nonofficial Remedies, 1934, p. 52).

The following dosage form has been accepted:

Ophthalmic Ointment Butyn 2% and Metaphen 1:10,000: Contains 2 per cent of butyn with metaphen 1:10,000 in a base of petrolatum.

Manufactured by the Abbott Laboratories, North Chicago, Illinois.

SCARLET FEVER IMMUNITY TEST (See New and Nonofficial Remedies, 1934, p. 406).

Parke, Davis & Co., Detroit.

Scarlet Fever Streptococcus Toxin for the Skin Test-P. D. & Co. (See New and Nonofficial Remedies, 1934, p. 406): also marketed in packages of one 10 cc. vial containing sufficient for 100 tests.

RABIES VACCINE (See New and Nonofficial Remedies, 1934, p. 378).

Parke, Davis & Co., Detroit.

Rabies Vaccine (Cumming) (See New and Nonofficial Remedies, 1934, p. 380): also marketed in packages of seven vials each containing one dose.

NORMAL HORSE SERUM (See New and Nonofficial Remedies, 1934, p. 362).

Parke, Davis & Co., Detroit.

Normal Horse Serum-P. D. & Co. (See New and Nonofficial Remedies, 1934, p. 363): also marketed in packages containing one 1 cc. rubber stoppered vial.

DUOTAL (See New and Nonofficial Remedies, 1934, p. 150).

The following dosage form has been accepted:

Duotal Tablets, 5 grains.

Manufactured by Winthrop Chemical Co., Inc., New York.

AGAR (See New and Nonofficial Remedies, 1934, p. 25).

The following dosage form has been accepted:

Agar-Agar Shreds-Reinschild.

Prepared by the Reinschild Chemical Co., New Rochelle, N. Y.

NEO-SYNEPHRIN HYDROCHLORIDE (See THE JOURNAL, June 16, 1934, p. 2024).

The following dosage form has been accepted:

Neo-Synephrin Hydrochloride Emulsion (Aromatic): Neo-synephrin hydrochloride 0.25 per cent, sodium benzoate 0.4 per cent, camphor 0.07 per cent, menthol 0.052 per cent, oil of red thyme 0.17 per cent in a mineral oil and water emulsion containing acacia. The product is preserved with chlorbutanol 0.5 per cent.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1934, p. 60).

The following dosage form has been accepted:

Procaine-Neo-Synephrin Hydrochloride Hypodermic Tablets: Each tablet contains procaine hydrochloride 0.02 Gm., neo-synephrin hydrochloride 0.0003 Gm., sodium chloride 0.007 Gm., and potassium sulphate 0.004 Gm. One tablet dissolved in 1 cc. of distilled water yields a solution containing procaine hydrochloride 2 per cent, neo-synephrin hydrochloride 0.03 per cent, sodium chloride 0.7 per cent, and potassium sulphate 0.4 per cent.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

ADVERTISING OF AMERICAN HONEY INSTITUTE

Sponsor.—American Honey Institute, Madison, Wis., is a trade association for promoting the general welfare of the honey industry, investigating its problems, and disseminating information on honey.

Occurrence, Composition and Nutritional Values of Honey.—Honey is deposited by bees in the cells of honeycomb, which the insect forms out of wax secreted by its body. It is gathered by the bees chiefly from the nectar of flowers and the exudations of leaves. The sucrose of the nectar is almost wholly inverted into dextrose and levulose. The nectar becomes concentrated in the hive by loss of moisture. The flavors of honey are due largely to the characteristic esters found in the nectar of different flowers.

The United States Department of Agriculture definition and standards for the various forms of honey follow:

1. Honey is the nectar and saccharine exudations of plants gathered, modified and stored in the comb by honeybees (Apis mellifica and A. dorsata), is levorotatory, and contains not more than 25 per cent of water, not more than 0.25 per cent of ash, and not more than 8 per cent of sucrose.

2. Comb honey is honey contained in the cells of honeycomb.

3. Extracted honey is honey which has been separated from the uncrushed comb by centrifugal force or gravity.

4. Strained honey is honey removed from the crushed comb by straining or other means.

The nutritional values of honey are essentially those of carbohydrates as a class; it contributes little to the minerals of the diet and is devoid of vitamins.

*Analyses** (representative analyses for various American honeys):

	Moisture, per cent	Invert Sugar, per cent	Sucrose, per cent	Ash, per cent	Dextrin, per cent	Undetermined, per cent	Free Acid as Formic Acid, per cent
Alfalfa (Medicago sativa)							
Maximum	20.47	79.18	10.01	0.16	0.65	3.12	0.17
Minimum	14.61	72.65	0.28	0.03	0.04	0.45	0.04
White clover (Trifolium repens)							
Maximum	20.24	78.15	7.09	0.20	2.46	7.45	0.10
Minimum	14.54	70.32	0.00	0.04	0.07	3.11	0.05
Buckwheat (Fagopyrum fagopyrum)							
Maximum	18.96	77.48	0.06	0.11	1.41	3.30	0.22
Minimum	18.11	76.21	0.00	0.07	1.04	3.25	0.20
Cotton (Gossypium herbaceum)							
Maximum	18.91	80.69	1.64	0.28	1.83	4.25	0.20
Minimum	17.79	74.70	0.48	0.13	0.40	0.48	0.12
Basswood (Tilia sp.)							
Maximum	20.25	78.55	2.03	0.35	7.58	4.21	0.18
Minimum	15.66	69.85	0.00	0.11	1.50	2.83	0.05
Sumac (Rhus)							
Maximum	19.25	73.73	2.01	0.90	6.42	6.68	0.18
Minimum	18.17	68.61	0.36	0.21	1.66	3.89	0.08
Orange (Citrus aurantium)	16.99	77.57	0.60	0.08	0.45	4.31	0.08
Tupelo (Nyssa aquatica)							
Maximum	18.38	72.40	4.36	0.08	2.69	6.02	0.06
Minimum	16.29	72.09	1.65	0.07	1.47	4.50	0.05

* U. S. Dept. of Agric., Bur. of Chem., Bul. 110 (1908).

Calories.—3.1-3.4 per gram; 88-97 per ounce.

Advertising.—The advertising consists essentially of general information on honey and its uses. Recipes are provided.

FARMER JONES BRAND PURE COUNTRY SORGHUM SYRUP

Manufacturer.—American Syrup & Sorghum Company, St. Louis.

Description.—Sorghum syrup or concentrated, clarified sorghum cane juice.

Manufacture.—The juice is expressed from sorghum cane stalks and is partially neutralized with dilute lime water, brought to a boil, filtered under pressure with the aid of infusorial earth, concentrated under "vacuum" to a semisyrup, heated to boiling, again filtered under pressure with the aid of infusorial earth and vegetable carbon, concentrated by boiling under "vacuum" to 81.5 per cent solids, and filled into friction top cans.

Analysis (submitted by manufacturer).—

	per cent
Moisture	21.9
Ash	2.3
Fat (ether extract)	0.0
Protein (N × 6.25)	0.4
Reducing sugars as invert sugar	34.7
Sucrose	36.4
Dextrins (by difference)	4.3

Calories.—3.0 per gram; 85 per ounce.

Claims of Manufacturer.—For cooking, baking and table use.

HERSHEY SYRUP GENUINE CHOCOLATE FLAVOR

Distributor.—Chocolate Sales Corp., Hershey, Pa.

Manufacturer.—Hershey Chocolate Corp., Hershey, Pa.

Description.—Chocolate flavored syrup prepared from sucrose, water, cocoa and invert sugar.

Manufacture.—The cocoa used is prepared as described for Hershey's Breakfast Cocoa (THE JOURNAL, March 17, 1934, p. 843) with the exception that the fat content is reduced to 9 per cent. The invert sugar ingredient is prepared by hydrolyzing sucrose with U. S. P. hydrochloric acid and subsequently neutralizing the acid with U. S. P. sodium carbonate.

Weighed amounts of the ingredients are mixed with violent beating in steam jacketed kettles. The mix is heated to boiling and flowed into filling machines, from which it is packed in steam heated cans. The canned syrup is processed at 88 C. for twenty minutes.

Analysis (submitted by manufacturer).—

	per cent	Moisture-, fat-, sugar-free basis
Moisture	38.2	
Ash	0.65	6.6
Ash insoluble in water	0.33	
Ash insoluble in acid	0.02	0.2
Fat	1.0	
Protein (noncaffeine and nontheobromine N × 6.25)	2.9	
Reducing sugars as invert sugar	5.0	
Sucrose	41.0	
Crude fiber	0.6	6.1
Carbohydrates other than crude fiber (by difference)	56.4	
*Theobromine	0.27	
*Caffeine	0.02	

*By Prochnow's modification of the Beckurts-Fromme method, Arch. d. Pharmaz. **247**: 698, 1910.

Calories.—2.5 per gram; 71 per ounce.

Claims of Manufacturer.—For covering desserts and preparing chocolate flavored milk drinks.

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors.—(1) Alamito Dairy Company, Omaha. (2) Carnation Company, Waterloo, Iowa. (3) City Dairy Company, South Bend, Ind. (4) Cloverdale Farms Company, Inc., Binghamton, N. Y. (5) Harris Cream Top Milk Company, Houston, Texas. (6) Hazle Milk and Ice Cream Company, Hazleton, Pa. (7) Landgren's Dairy, Kenosha, Wis. (8) Marigold Dairies, Inc., Austin, Faribault, Owatawa, Red Wing and Rochester, Minn. (9) Oakland Dairy, Pontiac, Mich. (10) Quality Milk Products Company, Tulsa, Okla. (11) Southwest Utility Dairy Products Company, Oklahoma City. (12) Wisconsin Valley Creamery Company, Wisconsin Rapids and Stevens Point, Wis.

Licensor.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with imitation vanilla extract. See Krim-Ko Chocolate Flavored Drink, THE JOURNAL, June 30, 1934, page 2187.

HAWAIIAN FINEST QUALITY PINEAPPLE JUICE

(1) AMERICAN LADY
(2) EDELWEISS
(3) NONE-SUCH
(4) SAVOY
(5) SUN-BLEST
(6) TOPMOST
(7) WEIDEMAN BOY BRAND
(8) WHITE VILLA

Distributors.—(1) and (6) General Grocer Company, St. Louis. (2) John Sexton & Company, Chicago and Brooklyn. (3) Durand-McNeil-Horner Company, Chicago. (4) Steele-Wedeles Company, Chicago. (5) Jacobson-Shealy Co., Inc., San Francisco. (7) The Weideman Co., Cleveland, Ohio. (8) White Villa Grocers, Inc., Cincinnati and Dayton, Ohio.

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Canned Hawaiian pineapple juice retaining in high degree the natural vitamin content; the same as Dole Hawaiian Finest Quality Pineapple Juice (Unsweetened) (THE JOURNAL, June 3, 1933, p. 1769).

GOLD MEDAL STERILIZED UNSWEETENED EVAPORATED MILK

Distributor.—Mohawk Milk Products Co., Inc., New York, subsidiary of the Carnation Company, Milwaukee.

Description.—Canned sterilized unsweetened evaporated milk. The same as Gold Cross Unsweetened Sterilized Evaporated Milk, THE JOURNAL, Jan. 28, 1933, page 259.

Claims of Manufacturer.—See announcement of acceptance of Evaporated Milk Association Educational Advertising, THE JOURNAL, Dec. 19, 1931, page 1890.

BIRELEY'S CALIFORNIA ORANGE JUICE WITH LEMON JUICE

(ADDED SUGAR, PECTIN AND ORANGE OIL)

Manufacturer.—Bireley's, Hollywood, Calif.

Description.—Pasteurized California orange juice containing added lemon juice, sucrose, pectin and oil of orange. Retains in high degree the vitamin content of the orange and lemon juices.

Manufacture.—The orange and lemon juices are prepared as described for Golden Bear California Pure Orange Juice (THE JOURNAL, Sept. 15, 1934, page 839).

During the season when tree-ripened fruit is not available, stored frozen juice prepared in the following manner is used: the strained juice obtained as described is frozen in a vertical type direct expansion freezer so designed as to freeze the juice rapidly (—17 C.) without incorporation of air, the juice issuing at from —3 to —2 C.

The mixture of formula proportions of ingredients is processed and canned as described for Golden Bear California Pure Orange Juice.

Analysis (submitted by manufacturer).—

	per cent
Moisture	51.8
Total solids	48.2
Ash	0.2
Fat (ether extract)	0.03
Protein (N × 6.25)	0.4
Reducing sugars as invert sugar	6.9
Sucrose (copper reduction method)	39.0
Crude fiber	0.1
Carbohydrates other than crude fiber (by difference)	46.1
Titratable acidity as citric acid	1.4

Calories.—1.9 per gram; 54 per ounce.

Vitamins.—Assay shows retention in large measure of the original vitamin C content.

Claims of Manufacturer.—For use as a beverage, dilute with four parts of water.

STRAINED BEETS, CARROTS, CELERY, GREEN BEANS, PEAS, PRUNES FLAVORED WITH LEMON JUICE, SPINACH, TOMATOES, AND VEGETABLES WITH CEREAL AND BEEF BROTH

UNSEASONED

(1) RED & WHITE BRAND
(2) WHITE SWAN

Distributors.—(1) Red & White Corp., Chicago.
(2) Waples-Platter Co., Fort Worth, Texas.

Packer.—The Larsen Company, Green Bay, Wis.

Description.—Respectively sieved beets, carrots, celery, green beans, peas, prunes flavored with lemon juice, spinach, tomatoes and vegetables (carrots, potatoes, tomatoes, celery, peas, beans, spinach) with pearl barley and beef extract; prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. These products are the same as the respective accepted Larsen's vegetables and fruits (THE JOURNAL, July 1, 1933, p. 35; July 8, 1933, p. 125; July 22, 1933, p. 282; July 29, 1933, p. 366; Aug. 12, 1933, p. 525; Aug. 19, 1933, p. 605; Aug. 26, 1933, p. 675; Sept. 2, 1933, p. 779).

IRRADIATED VITAMIN D PASTEURIZED MILK

(1) BOSWELL DAIRIES
(2) DAIRY LABORATORIES
(3) FERNDALE FARMS
(4) GLENCLIFF
  (a) GRADE A HOLSTEIN
  (b) GRADE A JERSEY
  (c) GRADE A
(5) HARRIS CREAM TOP
(6) NATOMA FARM'S
(7) PORTLAND MILK PRODUCERS ASSN.
(8) RIVERVIEW-DAMASCUS
(9) SPARKS DAIRY
(10) UNITED DAIRY
(11) WESTERN DAIRY COMPANY
(12) WIELAND'S

Distributors.—(1) Boswell Dairies, Fort Worth, Texas. (2) Dairy Laboratories, Inc., Seattle. (3) Ferndale Farms, Inc., Brooklyn. (4) Western Creameries, Inc., Tulsa, Okla. (5) Harris Cream Top Milk Company, Houston, Texas. (6) Natoma Farm, Hinsdale, Ill. (7) Portland Milk Producers Association, Inc., Portland, Ore. (8) Riverview-Damascus Milk Company, Portland, Ore. (9) Sparks Dairy, Inc., Buffalo. (10) United Dairy Company, Inc., Chicago. (11) Western Dairy Company, Chicago. (12) Wieland Dairy Company, Inc., Chicago.

Description.—Bottled pasteurized vitamin D milk irradiated with ultraviolet rays (patent No. 1,680,818).

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. For description of irradiation, see THE JOURNAL, October 7, 1933, page 1155.

Vitamins.—Clinical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used. Contains 135 U. S. P. X (Revised, 1934) vitamin D units per quart.

Claims of Distributors.—Irradiated antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

POLAND WATER CARBONATED BY ARTIFICIAL CARBONATION

Manufacturer.—Hiram Ricker & Sons, South Poland, Maine.

Description.—Spring water of very low mineral content; artificially carbonated.

Manufacture.—Natural Poland Water (THE JOURNAL, May 27, 1933, p. 1689) is artificially carbonated with carbon dioxide gas, from liquid carbon dioxide in tanks, and bottled by the standard procedure.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 22, 1934

CAPILLARY PRESSURE AND CAPILLARY PERMEABILITY

The capillaries have generally been regarded as minute, inert, thin-walled tubules connecting the terminations of the smallest arteries with the commencement of the smallest veins and conducting blood through the body tissues in whatever quantity the arterioles might supply. During the past few years, however, a large amount of evidence has accumulated demonstrating conclusively that the capillaries perform other functions. Indeed, a recent commentator [1] has stated that the capillaries form one of the most important units of the entire circulatory system. Modern studies have shown that the capillaries are independently contractile and are capable of sensitive adjustment to the circulatory needs of the body tissues which they supply.[2] Also they perform the vital function of controlling the interchange of substances between the blood and the fluid bathing the body tissues. The importance of the capillaries as a filtering system is in part the result of the large total area of their walls. The capillaries of the muscles of an average man, for example, have a total area of approximately 6,300 square meters, or more than 3,000 times the area of the entire body surface. Furthermore, so efficient is the capillary wall as a filter that, if there were no restraining forces, the entire plasma volume of an average man would pass through the capillaries into the body tissues within ten seconds. Obviously, the movement of fluid between the blood and the body tissues depends fundamentally on the nature and permeability of the dividing membrane, the capillary endothelium. In a recent comprehensive review, Landis [3] has discussed the relation between capillary pressure and capillary permeability to the exchange of fluid between the blood and the body tissues.

1. The Human Capillaries, editorial, J. A. M. A. **102**: 295 (Jan. 27) 1934.
2. Krogh, August: The Anatomy and Physiology of the Capillaries, revised edition, New Haven, Yale University Press, 1929. Lewis, Thomas: The Blood Vessels of the Human Skin and Their Responses, London, Shaw & Sons, Ltd., 1927.
3. Landis, E. M.: Capillary Pressure and Capillary Permeability, Physiol. Rev. **14**: 404 (July) 1934.

The movement of fluid through the capillary wall depends primarily on the balance between capillary blood pressure and the colloid osmotic pressure of the blood, the former force promoting the filtration of fluid from the capillaries and the latter favoring retention or absorption. Measurements show that these two opposing physical forces are approximately equal. Capillary pressure, as determined by the long period, microcannulation technic, varies from 12 to 32 mm. of mercury; colloid osmotic pressure shows a similar value equivalent to from 22 to 29 mm. By the same method, Landis has also shown that a gradient of pressure exists in the capillary itself, the pressure in the arterial portion definitely exceeding that in the venous end. Furthermore, the capillary pressure in the arterial portion exceeds the colloid osmotic pressure, thus favoring the filtration of fluid from the capillaries, whereas the reverse is true in the venous end; the opportunity for fluid absorption is thereby enhanced. In general, those factors which increase capillary pressure promote an increased filtration of fluid through the endothelium, whereas a decrease in pressure favors a retention of fluid. Such variations in capillary pressure may be elicited by changes in arterial tone, freedom of venous outflow, posture or temperature.

Another physical factor of some importance in regulating the movement of fluid through the capillary wall is that of tissue pressure. This force opposes the filtration of fluids into the tissues. Tissue pressure is effective only within limits, however, as it fails under prolonged, excessive filtration, presumably because of the imperfect elasticity of the tissues.

Complex changes in capillary pressure and capillary permeability may be initiated by such agents as variations in temperature, tissue activity and injury. Heat may increase the filtration of fluid through the capillary wall by producing capillary dilatation, by causing a rise in capillary pressure or by actual injury of the endothelium, resulting in an increased permeability of the endothelium to colloids and a consequent lowering of the effective osmotic pressure of the plasma proteins. Functional activity of the tissues induces a hyperemia and a simultaneous rise in capillary pressure, thus favoring an increased movement of fluid into the tissues. The accumulation of carbon dioxide and slight change in hydrogen ion concentration that occur during vigorous tissue activity appear to exert little if any effect on the permeability of the capillaries. Anoxemia, however, if extreme, may produce a temporary increase in permeability, which may be great enough to reduce the effective colloid osmotic pressure of the blood to half its normal value. Local injury of the capillaries may set up a series of complex responses, including vasodilatation, rise in capillary pressure, altered rate of blood flow, increased endothelial permeability and, finally, stasis. All forms of local or general edema produced by injury are due fundamentally to increased

capillary permeability with the easy passage of proteins and water through the endothelium.

Is the movement of fluid through the capillary wall controlled by simple physical forces, such as those discussed, or is there an active intervention of the endothelium? This question still seems to be an open one. Apparently, many of the facts concerning fluid balance, particularly in the intact animal and in cases of clinical edema, cannot be explained in terms of simple physical forces. However, Landis has pointed out that not until the physical factors are adequately understood will the search for "vital" intervention prove productive.

In view of the many contributions elucidating the question of capillary function, most physiologists will undoubtedly agree with Landis that the capillaries form a most important unit of the circulatory system, responding individually in a delicate manner to the circulatory needs of the immediately adjacent tissues, and controlling effectively the interchange of substances between the blood and the fluid bathing the body tissues.

FLIES, FILTH AND BACTERIA

Real understanding of the place of flies as vectors of disease probably dates from the report of the Typhoid Commission of 1898. Thus Vaughan,[1] who had been one of the members of this commission, states that typhoid was less frequent among those who ate in screened mess rooms than among those who took their food in unprotected quarters. Flies were found swarming over infected fecal matter in the latrines and the same ones visiting and feeding on the food prepared for the soldiers in the mess tents. Now it is generally recognized that the house fly also plays a part in the distribution of conditions other than typhoid.

The exact rôle of the common fly as a carrier of disease probably varies greatly in different localities. A recent report by Parisot and Fernier [2] is significant in this connection. Their particular interest in the subject arose from the fact that in the rural districts of the department of Meurthe-et-Moselle, as the American expeditionary forces frequently testified, it is customary for manure heaps to be placed in front of the houses—the size of the heap bearing mute witness to the number of livestock belonging to the owner. Naturally flies are especially numerous in these districts, and although no figures are quoted by the authors it is indicated that disease, especially of the gastro-intestinal tract, is unusually frequent.

In order to make a rough estimate of flies as a potential bacterial reservoir, Parisot and Fernier carried out bacterial counts on flies caught by hand. Ten flies were placed in a bottle, each bottle having a capacity of about 20 cc. To each bottle 10 cc. of sterile physiologic solution of sodium chloride was added. The flies were kept in this solution for thirty minutes and agitated frequently. With a sterile pipet yielding twenty drops per cubic centimeter, one drop of the liquid was withdrawn and diluted 1 : 1,000. This was seeded on gelatin or agar and the colonies were counted at the end of three days on gelatin and forty-eight hours on agar after incubation at 37 C. In order to determine the number of bacteria corresponding to one fly, the colonies given by the count had to be multiplied by 20,000 to allow for the dilution. Naturally the final figures are thus only approximate. They also carried out a special test for B. coli by preparing ten tubes of peptone broth treated with phenol to 1.25 per thousand. Into the first tube they introduced twenty drops of the liquid used for washing the flies. This quantity was decreased step by step to one drop of a 1 : 10 dilution in the ninth tube, the tenth serving as a control. The tubes were placed in the incubator for five days at 38 C. and the presence of B. coli was determined by testing the cultures for indole production according to the method used for water analysis. On this basis the approximate number of B. coli per fly could be estimated.

As a result of these studies they felt that they could state that each fly without distinction of origin carried microbes ranging in number from 60,000 to over 25 million. Both in regard to total bacterial flora and number of B. coli carried, those flies coming in contact with unprotected manure heaps were heavier reservoirs than those caught in town flats or especially in forests. Thus in the flies caught in the immediate proximity of manure heaps the total bacterial content varied from over 10 million to over 26 million, and in all instances more than 200 B. coli per fly were also found. On the other extreme were the flies caught in forests, which contained from 60 thousand to 602 thousand microbes. In only one instance was a B. coli colony found.

An interesting part of these investigations concerned the sterilizing effects of the sun's rays on the bacterial flora of flies. When a group of flies was exposed to the sun's full rays for two hours at from 30 to 40 C. the count was 160,000; in control flies there was a bacterial count of 2,540,000 colonies at the moment of capture. Similar but even more pronounced was the drop in bacterial flora of flies caught near manure heaps.

Since the work of the Typhoid Commission there has never been any doubt that flies carrying pathogenic micro-organisms can readily seed foodstuffs. The truth is again demonstrated by the results of Parisot and Fernier. After only one minute contact between the fly Musca domestica and an ordinary agar plate, ninety-three colonies were counted after twenty-four hours. Furthermore, contact of only a few minutes was found sufficient to seed milk, from which enormous bacterial proliferation could occur even after two hours.

While it is true that these studies emanate from rural districts in France, renewal of the knowledge of the

1. Vaughan, V. C.: Epidemiology and Public Health, St. Louis, C. V. Mosby Company **2**: 304, 1923.
2. Parisot, J., and Fernier, L.: The Best Method of Treating Manure Heaps to Prevent the Hatching of Flies, League of Nations, Quart. Bull. of the Health Organization **3**: 1 (March) 1934.

bacteria carrying ability of flies may be particularly apropos in view of the widespread gastro-enteritis and summer diarrhea in this country this year.

THE AGLOMERULAR KIDNEY

Older pathologists believed that the ultimate fate of the kidney glomerulus in chronic nephritis is fibrinous degeneration with the formation of a permanent hyaline scar. The ratio of normal glomeruli to hyaline scars, therefore, was taken as a reliable index to the extent of the kidney degeneration. Doubt as to the validity of this assumption has recently been expressed by pathologists, who conceive the possibility of complete absorption of degenerated glomeruli without the formation of permanent scars.

Joelson, Beck and Moritz [1] of the Laboratory of Surgical Research, Western Reserve University School of Medicine, for example, made histologic sections of dog kidneys at varying intervals after unilateral urethral obstruction. From these sections they inferred a probable reduction in the total number of glomeruli which was greater than that indicated by the percentage of hyaline glomerular remnants.

This inference is confirmed by Moritz and Hayman,[2] who have applied to the problem some of the newer methods of quantitative glomerular assay. To count the total number of glomeruli in a kidney, the Cleveland investigators perfused intact kidneys with physiologic solution of sodium chloride followed by a prussian blue injection mass. Blocks of the injected kidneys were taken for routine histologic study. Aliquot parts of the same kidneys were macerated in 50 per cent hydrochloric acid. Since the injected glomeruli are resistant to this acid, they appear as deeply stained blue balls in the digestates. The number of injected glomeruli, therefore, is counted by means of a ruled watch glass. From this number the number of noninjected normal glomeruli and of recognizable hyaline scars is readily determined. Applying this techic, the Cleveland investigators found that, within sixty days after partial urethral obstruction plus unilateral exposure to x-rays in rabbits, as many as 70 per cent of all glomeruli may be completely absorbed from the exposed kidney without leaving microscopically demonstrable hyaline masses. In presumably normal human kidneys they found the average number of apparently normal glomeruli to be 1,282,800. In chronic renal disease they found several cases in which the total number of demonstrable glomeruli was reduced to 500,000 or even to 300,000 per kidney. Only 2 to 6 per cent of this number might be represented by hyaline or fibrinous masses. From one half to two thirds of all glomeruli of these kidneys had apparently disappeared without leaving microscopically demonstrable traces.

1. Joelson, J. J.; Beck, C. S., and Moritz, A. R.: Renal Counterbalance, Arch. Surg. **19**: 673 (Oct.) 1929.
2. Moritz, A. R., and Hayman, J. M. Jr.: Am. J. Path. **10**: 505 (July) 1934.

Current Comment

PRACTICAL PATRIOTISM

The Department of Health of New Haven, Conn., has instituted a campaign to prevent the sale of fireworks for the Fourth of July. On the cover of the July bulletin of the department [1] is a tabulation of Fourth of July accidents from fireworks for New Haven and Bridgeport for the last six years. In 1929 New Haven had fifty-one such accidents and Bridgeport seventy-four. The following year New Haven had 143 and Bridgeport 211. In that year Bridgeport adopted an ordinance prohibiting the sale and use of fireworks and New Haven rejected a similar ordinance. In the following four years New Haven had 152, 79, 83 and 104 accidents, while Bridgeport had 7, 6, 4 and 2. Such graphic representation is more than convincing of the desirability of similar ordinances to control elsewhere the unnecessary damage resulting from atavistic celebrations of the nation's independence.

CYTOPLASMIC ANTIBODIES

The recently developed technic for obtaining practically undiluted cytoplasm for immunologic study should yield valuable immunochemical data and modify many theories of specific allergy and specific immunity. The well confirmed fact that certain experimental allergies and immunities are not accompanied by demonstrable "antibodies" in the blood stream and the recently suggested possibility that homologous intracellular and extracellular "antibodies" may be of different specificities [1] demonstrate the need for some such cytoplasmic technic. Study of intracellular specificities has usually been attempted by extracting minced tissues with physiologic solution of sodium chloride, glycerin, alcohol or other solvents, or by perfusing intact organs with Ringer's solution. Such technics at best yield but dilute solutions of the intracellular products. To obtain relatively undiluted cytoplasm, therefore, Seegal and Khorazo [2] of Columbia University expressed tissue juices by means of a hydraulic press. The tissues were first cut into small fragments and then minced with a large volume of filter paper. The resulting grumose mass was wrapped in cheese-cloth and subjected to a pressure of about 16,000 pounds to the inch. About 15 or 20 per cent by weight of the tissue was recovered in the expressed juice. The pressure was found sufficient to break up all tissue cells, no intact cells being demonstrable in the residue. As a sample of the application of this technic, the Seegals [3] made a quantitative study of the cytoplasmic antibodies in certain hypersensitive tissues. Following unilateral injection of typhoid vaccine into the anterior chamber of the rabbit's eye, for example, the local specific agglutinin titer of the press juice at times was from two to four

1. Health, Monthly Bulletin, New Haven Department of Health **61**, July, 1934.
1. Chambers, J. V.: Proc. Soc. Exper. Biol. & Med. **30**: 874 (April) 1933.
2. Seegal, Beatrice C., and Khorazo, Devorah: Proc. Soc. Exper. Biol. & Med. **31**: 435 (Jan.) 1934.
3. Seegal, Beatrice C., and Seegal, David: Proc. Soc. Exper. Biol. & Med. **31**: 437 (Jan.) 1934.

times that of the blood stream and from ten to twenty times that of the aspirated aqueous humor. Occasionally intracellular agglutinins were demonstrated with no demonstrable agglutinins in the adjacent extracellular fluids.

Medical Economics

SAN DIEGO CENTRAL CLINIC SERVICE

The Central Clinic Service of San Diego originated with a suggestion from the Health Council of the Community Welfare Council. The objective was to provide an organized method of meeting the medical needs of the resident indigents and others whose incomes would permit either a part or full pay service. The Central Clinic Committee is composed of representatives of the county medical society, the community welfare council, the county and city health departments, county hospital advisory board, health and development department of the city schools, navy relief, Mercy Hospital and San Diego Hospital. An executive secretary and staff operate under the supervision of the board of directors. The principal functions of this executive staff are to conduct a social service investigation to determine resources and fees to be charged and to direct patients to the physician of their choice or, if no choice exists, to a list of physicians in alphabetical order.

Patients come to the Central Clinic Service from four main sources, the physician, hospital, clinic or by direct application of the patient himself. By far the most important source is the physician, as is shown by table 1, covering the year 1933 and first six months of 1934.

TABLE 1.—*Sources from Which Patients Came to Clinic*

	Number	Per Cent
Year 1933		
Referred by physicians	541	40.7
Referred by self	219	15.4
Referred by county	247	18
Referred by Mercy Hospital	87	6.3
Referred by San Diego Hospital	20	1.3
Referred by school clinic	103	7.6
Referred by other agencies	133	9.8
Jan. 1, 1934, to June 30, 1934		
Referred by physicians	328	50.7
Referred by self	106	16
Referred by county	68	10.3
Referred by Mercy Hospital	26	3.9
Referred by San Diego Hospital	5	0.7
Referred by school	68	10.3
Referred by other agencies	54	8.2

There has been a continuous growth in the work of the clinics and in the proportion of families that are able to pay full or part fees.

TABLE 2.—*Distribution of Wages*

241, or 53.8%, of this group and 30.4% of the total number of families earned below $75 monthly
140, or 31.3%, of this group and 17.6% of the total number of families earned between $75 and $110 monthly
32, or 7.1%, of this group and 4% of the total number of families earned between $110 and $125 monthly
10, or 2.2%, of this group and 1.3% of the total number of families earned between $125 and $130 monthly
25, or 5.6%, of this group and 3.1% of the total number of families earned between $130 and $135 monthly

The fees collected in 1933 amounted to $22,850.39. In the first six months of 1934 they were $18,888.56. The character of the population served is shown by the fact that, of 794 families given reduced fees in 1933, 448, or 56.4 per cent, were earning regular wages of some amount. The distribution of these wages is given in table 2.

Information on which this article is based is obtained from the Bulletin of the San Diego County Medical Society (Jan. 19, 1934) and from material furnished by the executive secretary of the clinic.

Of the 794 families, 346 earned irregular wages or had other sources of income such as compensation, commission, pensions, or were unemployed. These were distributed as in table 3.

There are 182 physicians in the San Diego County Medical Society who agreed in January 1933 to take Central Clinic Service patients.

"As much time as we know must be spent by all families in 'making ends meet' it has been surprising to learn how few of them have actually figured medical costs into monthly or annual budgets.

"One of the important factors in the work of the Central Clinic Service has been to analyze expenditures with heads of families, to make suggestions and to plan monthly allotments, for medical service. It has been gratifying to find that this service is successful and that families have profited by the experience.

TABLE 3.—*Income of Families Given Reduced Fees*

129, or 37.3%, of this group or 16.2% of the total number of families were unemployed
122, or 35.3%, of this group or 15.4% of the total number of families earned irregular wages
16, or 4.6%, of this group or 2% of the total number of families had compensations
31, or 8.9%, of this group or 3.9% of the total number of families earned commissions
48, or 13.9%, of this group or 6% of the total number of families had pensions

"'Steering' patients is one of the real jobs of the Central Clinic Service. The 20 per cent of patients sent to physicians at full fee were not all bargain hunters who came to the agency seeking lowered fees. Many of them were persons who were at a loss how to arrange for adequate care. The explanations of the parts played by diagnostic and treatment service of the laboratories, x-ray departments, specialties of all kinds has been important. Interpretation of the social situation of the patient to the physician undertaking the treatment has been equally important.

"Many cases have been undertaken as Central Clinic Service cases only to find that, once the service has been arranged, the patients can make their own further plans. Having assurance that costs could be controlled if necessary has been a factor in the patients' undertaking diagnostic or treatment procedures.

"Gratitude to the referring physician and to the whole service has been the outstanding point of view of patients and their families.

"The chance to have the service of the family physician or the specialists within fees that they can pay has given many patients real gratification. It has meant that the values of the patient-physician relationship have been preserved, that medical service of the finest type has been available to all members of this community.

"If social problems arise, the patients are referred to social agencies which can assist or advice is given by the Central Clinic Service workers. Cooperation between agencies has been a policy always observed.

"Each case is approached from the point of view of the family in relation to the present medical problem. The record kept is a modification of the usual medical-social face-sheet used in most case work practice. The patient shares in making the plan, he examines his own resources and those of his family. Both assets and liabilities, social and financial, are considered, situations are faced frankly. Relatives who can assist are asked to do so. But patients are taken into the plan and the success depends on the skill of the social worker in establishing in the patient the sense that he is making his budget and at his own standard of living.

"Policies regarding eligibility for reduced fees are based necessarily on the medical service involved. A family which would not be given reduced fees for minor dental service might be eligible for major surgery.

"Life insurance is generally considered an asset. However, if the family is overinsured on the general family budget the cashing of some policies is encouraged. This is true, too, if the family is obviously letting present needs suffer to save for the indefinite demands of the future.

"The owning of homes or the buying of moderately priced homes does not in any case exclude patients from the service. The purchase or retention of property for income or speculation, however, places the family in another category.

"The owning of automobiles does not exclude from service, but the purchase of expensive cars or luxuries in furniture and household equipment does.

"Reduction of fees is on a sliding scale and these above-mentioned factors are all taken into consideration.

"Patients are quick to recognize that the purpose of the Central Clinic Service is to give them adequate medical service and the cooperation of the majority of the families is splendid.

"The year shows that the applicants are made up of sincere persons, occasionally misguided, occasionally querulous, as a result of ill health or poverty, but eager for the most part, to be self dependent.

"The plan of fee setting for cases requiring hospitalization has been to use the part-pay hospital fee as a basis for the surgeons' fee and to pay the anesthetist and assistant in proportion.

"The original plan of fees outlined in Dr. Hall Holder's study of Central Clinic Service published in February 1933 is in use now. The basic surgical fee to hospitals is $3.50 per day including operating room service, routine medicines, and a minimum supply of dressings. Four-bed wards are used except in those cases where a private room is considered necessary by the physician. Private-duty nursing has been on the same basis.

"Nursing service has been limited to a few days or nights and patients, for the most part, have accepted that the physician's judgment shall determine the type of nursing service required.

"It has been almost a universal experience that if requests are made for special services, not medically necessary, the patients are not within the part-pay group.

"Part of the work of the Central Clinic Service is to plan the surgical service with the patients, outlining the facilities involved, explaining and interpreting those necessary for the welfare of the patients. This is an important and detailed social service function.

"The secretary and the board of directors cannot speak too highly of the attitude of all cooperating agencies. The Central Clinic Service average of twelve hundred telephone calls a month bespeaks the constant relationship of the service with physicians, hospitals, druggists, ambulance service, and nursing service in working out the individual cases.

"Both the executive-secretary and the field worker are members of the American Association of Social Workers and are 'registered social workers' under the standards recently adopted by the California Conference of Society Work."

The reception of the plan by the community may be judged to some extent from the following editorial in the San Diego Union, Aug. 20, 1934:

"San Diego County's medical society undertook a new experiment in cooperating with its members' clientele some eighteen months ago when it established the Central Clinic. Now, after an extremely encouraging beginning, the society asks local employers to help extend the service.

"As many readers will recall from published reports, the Clinic was designed to meet the need of persons who wished to pay their way but who could not carry the full cost of medical or surgical treatment. To solve this problem an office was established under a competent social worker who was responsible for fixing the amount that any particular applicant could pay. On their part approximately 65 per cent of the Society's members agreed to abide by the decision of the central office.

"The experiment is a success. It has been widely discussed and, we are informed, has been copied in other communities. Viewed from the layman's point of view, this success is understandable. Obviously the physicians made a real sacrifice when they surrendered some of their freedom of action by accepting the aid of a third party in arriving at an equitable fee in any given instance.

"This sacrifice should win them a sympathetic hearing in calling upon local employers to cooperate by either making loans to their employees against future wages or by working out some other means of spreading the cost of emergency treatment over a considerable period.

"All parties admit that the cost of medical care is sometimes prohibitively high. We congratulate the physicians in attacking this problem locally. And we believe that they have made sufficient progress to justify their request that business concerns help broaden the Clinic's usefulness."

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central daylight saving time. The next three broadcasts will be as follows:

September 27. Swimming Pool Sanitation, J. F. Hammond, M.D.
October 4. Autumn Leaves, W. W. Bauer, M.D.
October 11. Multiple Births, W. W. Bauer, M.D.

National Broadcasting Company

Through the courtesy of the National Broadcasting Company, the American Medical Association will resume broadcasting over the blue network on Oct. 2, 1934. Broadcasts will be scheduled each Tuesday afternoon from 4 to 4:15, central standard time. The number of stations, and their identity, to which this program will be available will be published in THE JOURNAL as soon as available. Topics and speakers for October are as follows:

October 2. Curiosities of Medicine, Morris Fishbein, M.D.
October 9. School Health Problems, W. W. Bauer, M.D.
October 16. Research in Medicine, A. C. Ivy, M.D.
October 23. Reading About Health, W. W. Bauer, M.D.
October 30. "Diphtheria Must Go," W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Sale of Dinitrophenol Restricted.—Physicians licensed to practice medicine in California will have sole charge of the distribution of dinitrophenol in the future, in accordance with a resolution adopted by the state department of health, August 20. Since dinitrophenol has already been responsible for a number of deaths, the board forbids any one other than a licensed physician to prescribe, dispense or sell this product.

Gifts for Research.—Among gifts presented to the University of California recently were $2,500 from C. S. Howard and $800 from other citizens of San Francisco for support of research on poliomyelitis now in progress at the George Williams Hooper Foundation under the direction of Karl F. Meyer, Ph.D. A gift of $5,000 from the Rockefeller Foundation for the study of chemical aspects of vitamins and hormones under Dr. Herbert M. Evans, Berkeley, was also announced.

Society News.—At a joint meeting of the San Francisco District Dental Society and the San Francisco County Medical Society, September 4, the following dentists presented the program: Leland E. Carter, D.D.S., "Dental Radiographic Interpretation"; A. W. Ward, D.D.S., "Focal Infection," and Henley Miller, D.D.S., "Aspects of Oral Surgery."——Dr. Walter L. Bierring, Des Moines, Iowa, President, American Medical Association, addressed the Alameda County Medical Association, September 6, on "The Educational Function of the American Medical Association."——A symposium on epidemic poliomyelitis formed a part of the program before the health officers' section of the American Public Health Association at Pasadena, September 3-6. The speakers included Drs. Jay D. Dunshee, state health officer; James P. Leake of the U. S. Public Health Service, and Karl F. Meyer, Ph.D., San Francisco.

ILLINOIS

Encephalitis Continues to Increase.—For the week beginning September 3, forty-nine new cases of epidemic encephalitis were reported in Illinois, indicating a new high weekly prevalence level for the state this season, the Illinois State Department of Health reports. The department points out however that, since this total is only slightly higher than the forty-seven cases for the previous week, the peak wave has probably been reached. It was stated that three epidemic centers, Fulton, Peoria and Vermilion counties, reported eleven, twelve and seventeen cases respectively for the week of September 3, giving a total of forty. Elderly persons continue chiefly to be the victims, although a number of cases have been reported among children and young adults.

Society News.—Dr. Sidney O. Levinson, Chicago, discussed infantile paralysis before the Iroquois County Medical Society at Watseka, September 13.——The Pike County Medical Society was addressed in Pleasant Hill, July 26, by Drs. Kirk Shawgo on appendicitis; Milton E. Bitter, normal pregnancy, its care and delivery; Frank Cohen, allergy, and Walter M. Whitaker, diarrhea in children. All are from Quincy.——Dr. Frederick B. Balmer, Chicago, discussed "Medical Economics as an Essential Part of a Physician's Education" before the Peoria City Medical Society at its annual fish fry at the Illinois Valley Yacht and Canoe Club, September 5.——At a meeting of the Adams County Medical Society in Quincy, September 10, Dr. Clayton J. Lundy, Chicago, discussed the treatment of rheumatic disease. A motion picture on "The Mechanism and Electrocardiographic Registration of the Normal Heart Beat" was also shown.——Dr. William Thalhimer, Chicago, addressed the Fulton County Medical Society, August 15, on poliomyelitis.

INDIANA

University News.—The medical library of Indiana University recently received 130 volumes from Dr. Joseph N. Study, Cambridge City. Six volumes on internal diseases and a separate medical index were contributed by Mr. Robert R. Litz of the Medical and Dental Equipment Exchange, Indianapolis.

Society News.—Dr. Oscar N. Torian, Indianapolis, discussed childhood anemias before the Carroll County Medical Society at Bringhurst, August 17.——Dr. John H. Warvel, Indianapolis, addressed the Clinton County Medical Society in Frankfort, September 6, on diabetes.——Dr. Jean P. Pratt, Detroit, addressed the Tippecanoe County Medical Society at Lafayette, September 13, on "Endocrine Disturbances Peculiar to Women."

IOWA

Society News.—At a meeting of the Van Buren County Medical Association at Keosauqua, August 10, Drs. John H. Peck, Des Moines, discussed "Our Responsibility in Tuberculosis," and Daniel J. Glomset, Des Moines, "Coronary Disease."——Dr. Owen H. Wangensteen, Minneapolis, among others, addressed the Scott County Medical Society, July 26, on "Diagnostic and Therapeutic Considerations in the Management of Acute Abdominal Lesions."——Speakers before the annual meeting of the Dallas-Guthrie Counties Medical Society and its women's auxiliary in Woodward, August 2, included Drs. Thomas A. Burcham, Des Moines, on "Problems of the State Society," and Stuart W. Harrington, Rochester, Minn., "Diagnosis and Surgical Treatment of Carcinoma of the Breast."——Dr. James C. Donahue, Centerville, addressed the Davis County Medical Society in Bloomfield, July 11, among others, on "Fracture of Cervical Vertebrae."——At a meeting of the Floyd County Medical Society in Charles City, June 26, Dr. James B. Miner Jr. read a paper on "Clinical Types of Nocturnal Dyspnea."——Dr. Oliver J. Fay, Des Moines, among others, addressed the Cerro Gordo County Medical Society, August 14, on principles of medical practice.

KANSAS

Dr. Mills Appointed Editor.—Dr. William M. Mills, Topeka, has been appointed editor of the *Journal of the Kansas Medical Society*, succeeding Dr. Earle G. Brown. He will be assisted by a newly appointed editorial board, the selection of which is now being made by the executive secretary committee.

Society News.—Dr. Walter H. Nadler, Chicago, will speak before the Shawnee County Medical Society, October 1, on "Diagnosis and Treatment of Diabetes Mellitus."——The Wyandotte County Medical Society was addressed, September 18, by Dr. William W. Abrams on hypoglycemia. The society was addressed by Dr. Charles F. Taylor, Norton, on tuberculosis and hospital facilities.

KENTUCKY

Course in Pediatrics.—A graduate course in pediatrics will begin at the Children's Free Hospital, Louisville, October 10, and continue for ten weeks, under the auspices of the American Academy of Pediatrics. A fee of $5 will be charged for the course. In addition to the lectures and round table discussions, the newer diagnostic and therapeutic measures will be demonstrated.

Society News.—At a meeting of the Mason County Medical Society, July 26, Dr. Granville S. Hanes, Louisville, discussed rectal conditions.——A recent session of the Pulaski County Medical Society was addressed by Dr. Louis Frank, Louisville, on "Cancer of the Uterus," and Dr. Aura J. Miller, Louisville, the pathology involved.——Speakers before the Seventh Councilor District Medical Society at Crab Orchard, July 26, included Drs. Winston U. Rutledge, Louisville, on "Fungous Infections of the Skin," and Fred W. Rankin, Lexington, "Lesions of the Large Bowel and Rectum." A resolution was passed at this meeting commemorating the death of Dr. James B. Kinnaird, Lancaster.

MARYLAND

Typhoid Carrier Discovered.—In August, typhoid in a young man was reported to the Baltimore Health Department. Investigation disclosed no probable source of infection, but inquiry in the patient's family revealed that his mother had had the disease about forty years previously. Specimens proved positive for typhoid.

Vaccination Law Enforced.—The Baltimore Health Department has requested school authorities to adhere strictly to the vaccination law which forbids teachers to accept a pupil who does not present a certificate of successful vaccination. Parents have been urged to consult their family physicians and in those cases in which it is necessary a list of clinics has been furnished.

MICHIGAN

New Health Unit.—With headquarters in Hillsdale, the new health unit for Hillsdale County began to function, September 1. The W. K. Kellogg Foundation sponsors the unit with the cooperation of the state and county. Dr. Edward G. McGavran is director of the unit.

Society News.—Dr. Frank G. H. Maloney, Ironwood, was chosen president of the Upper Peninsula Medical Society at its recent annual meeting in Ironwood, succeeding Dr. John J. Walch, Escanaba. The next annual convention will be held in Iron Mountain, with the Dickinson-Iron County Medical Society as host.

Farewell Gifts to Dr. Warnshuis.—Organizations with which Dr. Frederick C. Warnshuis, formerly of Grand Rapids, has been associated for many years presented him with gifts on his departure recently for California to become secretary of the California Medical Association. The Kent County Medical Society gave a farewell party, at which a radio was presented to Dr. Warnshuis. The council of the Michigan State Medical Society gave him a wrist watch and the house of delegates a traveling bag, in recognition of his long service as secretary of the society. In addition, the house of delegates adopted a resolution expressing appreciation of his work as secretary and editor of the society's journal and as secretary of the State Board of Registration in Medicine. The staff of Butterworth Hospital, Grand Rapids, also entertained Dr. Warnshuis at a dinner and presented him with a desk set.

MINNESOTA

Graduate Course.—The University of Minnesota Medical School, Minneapolis, will offer a short graduate course for physicians, September 24-25. Half days will be devoted to a consideration of diabetes, tuberculosis, the heart and a fracture clinic, while Monday evening will be given over to a discussion of cancer. The fracture clinic will be given by the staff of the Minneapolis General Hospital.

Society News.—Speakers before the Wabasha County Medical Society at Lake City, July 5, included Drs. Rudolph C. Radabaugh, Hastings, on "Pioneer Medical Conditions in the County" and "Fecal Impaction Following Cholecystitis"; Francis J. Savage, St. Paul, "The Work of the State Medical Association During the Past Ten Years" and "Fractures of the Humerus"; Emery Covell Bayley, Lake City, "Report of Operation for Strangulated Hernia on a Four Weeks Old Premature Infant," and J. Grafton Love, Rochester, "Treatment of Head Injuries."

Southern Medical Meeting. — The Southern Minnesota Medical Association held its annual meeting at Mankato, August 13. Speakers included the following physicians:

Edward T. Evans, Minneapolis, Backache.
Lee W. Barry, St. Paul, Dysmenorrhea.
Owen H. Wangensteen, Minneapolis, Abdominal Pain.
Henry W. F. Woltman, Rochester, Headache.
Louis A. Brunsting, Rochester, Itching.
Philip W. Brown, Rochester, Diarrhea.
Gilbert J. Thomas, Minneapolis, Hematuria.
Arlie R. Barnes, Rochester, Irregular Pulse.
Thomas J. Kinsella, Oak Terrace, Surgery in Pulmonary Tuberculosis.
Edward L. Tuohy, Duluth, Management of Essential Hypertension.
Arthur E. Hertzler, Halstead, Kan., Functional Disorders of the Gastro-Intestinal Tract.
Joseph C. Michael and Burton P. Grimes, Minneapolis, End Results in the Malarial Treatment of Dementia Paralytica.

Clinics and demonstrations were also a part of the program. Dr. Sidney A. Slater, Worthington, was elected president; Drs. Charles W. Mayo, Rochester, and Joseph C. Michael, Minneapolis, vice presidents, and Harold C. Habein, Rochester, secretary.

NEW MEXICO

Public Health Meeting.—Dr. Eugene P. Simms, Alamogordo, was elected president and Dr. Walter E. Kaser, Las Vegas, vice president of the New Mexico Public Health Association at its annual meeting recently. A resolution adopted at the meeting empowered Dr. John Rosslyn Earp, Santa Fe, state health officer, to appoint a health education committee to disseminate information about public health problems of the state. George I. Sanchez, who was elected president of the committee at a meeting in Albuquerque, August 14, and Drs. Carl Mulky and Charles Howe Eller have accepted membership on the committee and others will include representatives of newspapers, parent-teacher associations, the Catholic Church and parochial schools and the Protestant churches.

NEW YORK

Society News.—Dr. William Justus Merle Scott addressed the Medical Society of the County of Monroe, Rochester, at a special clinic at Strong Memorial Hospital, August 16, on "Treatment of Gastric Versus Duodenal Ulcers."——Dr. Stuart B. Blakely, Binghamton, spoke on "Psychology in Obstetrics" before the Broome County Medical Society, September 11.

New York City

Dr. Holden Made Professor Emeritus.—Dr. Frederick Clark Holden, who has been associated with University and Bellevue Hospital Medical College since 1919, has retired as professor of obstetrics and gynecology and has been appointed professor emeritus. Dr. William Emery Studdiford Jr. has been promoted to professor of obstetrics and gynecology, effective September 1. Dr. Richard Charles Bodo has been made associate professor of pharmacology.

Survey of Slum Areas.—An inventory of real property in Manhattan by the Tenement House Commissioner and New York City Housing Authority has brought out the fact that nearly a fourth of the families lack ordinary sanitary conveniences. The figures show that 157,749 homes are without central heating plants, 120,622 have no tub or shower bath, 60,742 are without running hot water and 11,576 lack private indoor toilets. These conditions were found not only on the East Side, the recognized tenement district, but in other and supposedly more prosperous sections as well.

Hospital News.—The Beth David Hospital has purchased the Manhattan General Hospital and expects to occupy it within a year. With the additional ward space to be provided, the capacity of Beth David Hospital will be increased to 250 beds. This institution has been at its present location since 1910. ——The medical staff of the Jewish Memorial Hospital will be reorganized and enlarged in anticipation of the completion of its new building, according to *New York Medical Week*. Information concerning staff positions and application blanks may be obtained by writing Jacob Carlinger, superintendent. The address is Dyckman Street and River Road.

Course in Dental Medicine.—The fourth lecture course in dental medicine will open at Mount Sinai Hospital, October 9, with Dr. Ernst P. Boas as the speaker on "Physical Diagnosis: Clinical Observations in Relation to Dental Conditions." The following completes the series:

Dr. Samuel H. Geist, November 13, Importance of Prenatal Care.
Harry Sobotka, Ph.D., December 11, Chemistry of the Saliva and Its Influence on the Tissues.
Dr. Paul Klemperer, January 8, Histopathologic Studies of the Dental Tissues.
Dr. Philip Finkle, February 12, Arthritis and the Teeth.
Dr. Albert A. Berg, March 12, Treatment of Oral Surgical Lesions from the Viewpoint of the General Surgeon.
Harry A. Goldberg, D.D.S., April 9, Dental Infections, Their Significance and Treatment—Local and Systemic.

NORTH CAROLINA

Outbreak of Malaria. — About 500 persons have been stricken with a malignant form of malaria in Camden County, newspapers reported August 6. Bruce Mayne of the U. S. Public Health Service and Dr. Joseph C. Knox, Raleigh, state epidemiologist, went to the scene to investigate.

Society News.—Drs. Margaret Caroline McNairy, Lenoir, and Glenn R. Frye, Hickory, addressed the Catawba Valley Medical Society, July 10, on antepartum care and late toxemias of pregnancy, respectively. Dr. John D. Rudisill, Lenoir, discussed a recent outbreak of anthrax in and near that town.

Personal. — Dr. Robert S. McGeachy, Greenville, has resigned as health officer of Pitt County to accept a similar position in Halifax County. Dr. Zack P. Mitchell, Weldon, has transferred from Halifax to Vance County. Dr. Needham E. Ward Jr., Durham, was named temporary health officer of Pitt County.

OHIO

Memorial for Dr. Shipley.—Funds are being solicited by a civic committee of Canton to equip an emergency unit at the Aultman Hospital, Canton, as a memorial to the late Dr. Ralph T. Shipley, for many years chief of staff of the institution. Dr. Shipley died July 7. The committee hopes that all contributions will be received by October 1.

Dr. Hertzler Lectures.—Dr. Arthur E. Hertzler, professor of surgery, University of Kansas School of Medicine, will deliver the annual graduate lectures of the Academy of Medicine of Lima and Allen County, October 8-12. Ten lectures comprise the series which will be devoted to "Surgical Pathology," "Surgical Diagnosis" and "After-Care of Surgical Cases."

Poetry Contest.—The Academy of Medicine of Cleveland announces that a poetry contest for members will close, November 10, the winner to receive a silver cup. The material may be presented in any of the classic forms but must not exceed forty lines; it must be the original work of the candidate. All contributions should be sent to the editorial board, which has designated an outside authority to serve as judge.

Health at Columbus.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 1, indicate that the highest mortality rate (16.1) appeared for Columbus and that the rate for the group of cities as a whole was 9.3. The mortality rate for Columbus for the corresponding period last year was 10.8, and for the group of cities, 9.6. The annual rate for eighty-six cities for the thirty-five weeks of 1934 was 11.6, as against a rate of 11 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

OREGON

State Medical Meeting at Corvallis.—The sixtieth annual meeting of the Oregon State Medical Society will be held at Corvallis, September 27-29, with headquarters at the Hotel Benton. Guest speakers will be:

Dr. William C. Woodward, Chicago, director, Bureau of Legal Medicine and Legislation, American Medical Association, The Pending Cultist Initiative Measure.
Dr. Walter L. Bierring, Des Moines, Iowa, President, American Medical Association, Heart Disease and the General Practitioner.
R. R. Parker, U. S. Public Health Service, Hamilton, Mont., Rocky Mountain Spotted Fever.
Dr. Sterling Bunnell, San Francisco, Primary Operation for Intracapsular Fracture of the Femoral Neck.

Oregon physicians who will participate include:

Dr. Andrew J. Browning, Portland, Practical Considerations of Glaucoma.
Dr. Ernest A. Woods, Ashland, Infections of the Nose and Throat with Reference to Foreign Protein Therapy.
Dr. Joseph B. Bilderback, Portland, Vitaminized Foods.
Dr. John Guy Strohm, Portland, Acute Gonorrheal Infection in the Male.
Dr. Charles E. Hunt, Eugene, Recent Trends in Obstetric Analgesia: A National Survey.
Dr. Albert W. Holman, Portland, Functional Endocrine Disturbances of the Female Sex Organs.
Dr. T. Homer Coffen, Portland, Treatment of Angina Pectoris.
William Levin, Dr.P.H., Portland, Tularemia and Its Incidence in Oregon.
Dr. Arthur J. McLean, Portland, Fracture of the Vertebrae with Spinal Cord Lesions: Indications for Laminectomy.

Dr. Woodward will also address a joint meeting of civic clubs on "Why Regulate the Practice of the Healing Arts?" The eighth annual golf tournament will be held at the Corvallis Country Club, Saturday afternoon, and the annual banquet will be Friday evening at the Hotel Benton.

PENNSYLVANIA

State Medical Meeting at Wilkes-Barre.—The eighty-fourth annual session of the Medical Society of the State of Pennsylvania will be held in Wilkes-Barre, October 1-4. Guest speakers will be:

Dr. Frederick C. Holden, New York, Why Women Die in Childbirth—Some of the Reasons and Remedies.
Dr. George W. McCoy, Washington, D. C., Research Work of the National Institute of Health.
Dr. C. Macfie Campbell, Boston, Psychiatry from the Standpoint of the General Practitioner.
Dr. Herrman L. Blumgart, Boston, Clinical Management of Patients Before and After Total Ablation of the Thyroid for Chronic Heart Disease.
Dr. Jerome P. Webster, New York, Deforming Scars: Causes, Prevention and Treatment.
Dr. John Shelton Horsley, Richmond, Va., Diagnosis and Treatment of Cancer of the Large Bowel.
Dr. Charles N. Spratt, Minneapolis, Glaucoma: Results with Sclerecto-Iridodialysis.
Dr. William V. Mullin, Cleveland, The Blood in Otolaryngology.
Dr. I. Newton Kugelmass, New York, Clinical Control of Hemorrhagic Disturbances in Childhood.
Dr. Arthur F. Abt, Chicago, Leukemia in Childhood.
Dr. Howard Fox, New York, Diseases of the Tongue.
Dr. George G. Smith, Boston, Treatment of Tumor of the Bladder.

The annual golf tournament will be held at the Fox Hill Country Club, Pittston, Monday, October 1.

Philadelphia

President's Message to County Society.—Dr. Seth A. Brumm, president of the Philadelphia County Medical Society, in an address before the board of directors of the society at the opening of the season's activities, September 12, outlined recommendations of policy for the coming year. Dr. Brumm asserted that it is the duty of the society to uphold the ten principles of medical practice adopted by the House of Delegates of the American Medical Association at the eighty-fifth annual session in June. He said "the vigorous national policy of the American Medical Association must be followed by equally vigorous and intelligent economic policies by every state society, and the policies of the state societies must be supported and augmented by vigorous county medical society programs." In this connection he recommended closer cooperation between the medical profession and the lay health agencies of Philadelphia. "I believe the time has come when these agencies should be properly coordinated in order that their activities may be always intelligently directed by reason of the medical profession acting in an advisory capacity and with the added thought that all medical activities in Philadelphia should be and always remain under the jurisdiction of the medical profession," he declared. In a discussion of the civic relations of the society Dr. Brumm urged cooperation with the city department of health and touched on treatment of indigent patients at hospital clinics. It is especially important, he said, that hospital staffs guard against outside interference in order that the civic relation between the medical profession and the public shall remain at all times above reproach. In connection with continued education of the physician, Dr. Brumm recommended appointment of an advisory committee of medical educators to work with the society's committee on education in the formulation of a definite policy for efficient medical instruction adapted to the needs of the members.

TENNESSEE

University News.—Among changes in faculty positions announced by Vanderbilt University School of Medicine are the promotions of Dr. Seale Harris Jr. to associate professor of medicine and Jack M. Wolfe, Ph.D., to assistant professor of anatomy. The university also announces the publication in two volumes of the lectures delivered by Sir William B. Hardy and Dr. Francis R. Fraser in 1931 and 1933 under the Abraham Flexner Lectureship.

Health at Nashville.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 8, indicate that the highest mortality rate (18.4) appears for Nashville and that the rate for the group of cities as a whole was 10.1. The mortality rate for Nashville for the corresponding week of last year was 16.5 and for the group of cities, 9.4. The annual rate for the eighty-six cities for the thirty-six weeks of 1934 was 11.5, as against a rate of 11 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Society News.—Drs. Walter C. Alvarez and Frederick A. Willius, Rochester, Minn., addressed a special meeting of the Nashville Academy of Medicine and Davidson County Medical Society, July 31, on "Diagnosis and Treatment of Diarrhea" and "Newer Concepts of Coronary Disease," respectively.——At the meeting of the Chattanooga and Hamilton County Medical Society, September 6, Dr. Robert C. Robertson, Chattanooga, spoke on "Direct Fixation on Hip Fractures."——Dr. Jewell M. Dorris, Memphis, addressed the Giles County Medical Society, July 26, on "Diagnosis and Treatment of Head Injuries."——Speakers at the July meeting of the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, Savannah, July 31, were Drs. John H. Tilley, Lawrenceburg, on "Acute Abdominal Symptoms Arising from Ovarian Pathology"; Phillip C. Schreier, Memphis, "Treatment of Cervical Erosions and Its Relationship to Cancer," and Walker L. Rucks, Memphis, "Infant Feeding."——Dr. James E. Cottrell, Philadelphia, addressed the Knox County Medical Society, July 10, on infantilism and dwarfism.

VIRGINIA

Typhoid from Spring Water.—Twelve cases of typhoid with two deaths have been reported from Edgewood, near Roanoke, as a result of using water from a contaminated spring.

Personal.—Dr. Edwin L. McQuade, recently health officer of Albemarle County, has been appointed director of rural health work for the state department of health to succeed Dr. Irl C. Riggin, who was recently made state health officer.

WEST VIRGINIA

Toxoid Replaces Toxin-Antitoxin.—The West Virginia Department of Health announces that henceforth one-dose toxoid will be distributed for immunization against diphtheria instead of toxin-antitoxin. Physicians who still prefer the older preparation may have it on request.

Society News.—Dr. Rome H. Walker and Mr. Joe W. Savage, Charleston, president-elect and executive secretary, West Virginia Medical Association, addressed the Greenbrier Valley Medical Society at Ronceverte, August 21, on medical economics.——The Fayette County Medical Society was addressed at its meeting in Oak Hill, August 14, by Dr. Walter E. Vest, Huntington, on "Lung Abscess," and Dr. George E. Gwinn, Beckley, on "Newer Developments in the Treatment of Tuberculosis."——At a meeting of the Logan County Medical Society in Logan, August 15, papers were presented by Drs. Oscar B. Biern and Richard B. Easley, Huntington, on "Medical Aspects of Cholecystitis and Cholelithiasis."——Dr. Carl S. Bickel, Wheeling, discussed placenta praevia and toxemias of pregnancy before the Tyler-Wetzel Bi-County Medical Society at New Martinsville, recently.——Dr. Waitman F. Zinn, Baltimore, addressed the Monongalia County Medical Society, Morgantown, August 7, on "Acute Infections of the Middle Ear and Its Complications."

WISCONSIN

Presentation of the Gold Seal.—At the annual dinner of the State Medical Society of Wisconsin in Green Bay, September 13, the gold seal of the society was presented to Dr. Arthur W. Rogers, Oconomowoc, president of the Waukesha County Medical Society and of the Milwaukee Academy of Medicine and formerly president of the state society; to Dr. Rock Sleyster, Wauwatosa, editor of the state society's journal, formerly president and secretary of the society, and now vice chairman of the Board of Trustees of the American Medical Association, and to Dr. Olin West, Chicago, Secretary and General Manager of the American Medical Association.

Society News.—Dr. George H. Ewell, Madison, addressed the Columbia County Medical Society at the Wisconsin Dells, August 13, on "Diagnosis and Treatment of Diseases of the Rectum and Anus."——At a meeting of the Polk County Medical Society, July 19, Drs. William T. Peyton, Minneapolis, and William A. O'Brien, St. Paul, discussed the diagnosis and treatment of malignant conditions and relationship of public health and the medical profession, respectively.——Dr. Maynard H. Fuller, Green Bay, addressed the Shawano County Medical Society, July 26, on "Industrial Eye Injuries."——Speakers before the Tenth Councilor District Medical Society at Iron River, August 15, included Dr. Myron O. Henry, Minneapolis, on "Supracondylar Fractures of the Humerus."——Drs. Harold E. Marsh and Carl S. Harper, Madison, were guest speakers at a meeting of the Ninth Councilor District Medical Society at Marshfield, August 16, on "Treatment of Thrombophlebitis with Leeches" and "Toxemia of Pregnancy," respectively.

WYOMING

Rocky Mountain Spotted Fever. — Twenty-one deaths from Rocky Mountain spotted fever have occurred in a total of ninety-one cases reported for the year 1934 up to August 1, according to *Colorado Medicine*. It is pointed out that the northern two thirds of Wyoming produced all the cases, while the southern one third was entirely free. The wood ticks appeared earlier than usual this year and in greater numbers. The supply of the Spencer-Parker vaccine which is distributed free by the U. S. Public Health Service from Hamilton through the state health departments, was inadequate; this year less than half of the persons who wanted to be vaccinated could be accommodated.

GENERAL

Society News.—The Radiological Society of North America will hold its twentieth annual meeting at the Hotel Peabody, Memphis, Tenn., December 3-7. Further information may be obtained from the secretary, Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y.

Bequests and Donations. — The following bequests and donations have recently been announced:

St. Vincent's Hospital, New York, $65,000 by the will of the late Mrs. Margaret Havens Hurlburt.

Mount Sinai and Beth Israel hospitals, New York, $5,000 and $2,500, respectively, by the will of the late Harry M. Goldberg. Each will also benefit from the residuary estate.

New Rochelle Hospital Association, New Rochelle, N. Y., $10,000 by the will of the late Florence M. Childs.

New Rochelle Hospital, $1,000 by the will of George W. Kuchler.

White Plains Hospital Association, $5,000 by the will of the late Clara B. Brown.

Officers of Academy of Ophthalmology and Otolaryngology.—Dr. Frank E. Burch, St. Paul, was chosen president elect of the American Academy of Ophthalmology and Otolaryngology at the annual session in Chicago, September 10-14, and Dr. Wells P. Eagleton, Newark, N. J., became president; other officers elected included Drs. William Thornwall Davis, Washington, D. C., Samuel Iglauer, Cincinnati, and Marie F. Weymann, Los Angeles, all vice presidents, and William P. Wherry, Omaha, secretary, reelected. The academy's medal of honor was awarded to Dr. Carl Koller, New York, who first introduced cocaine as a local anesthetic fifty years ago. In the absence of Dr. Koller, who was unable to attend because of illness, the medal was received by his daughter, Mrs. James Becker, Highland Park, Ill.

Mississippi Valley Tuberculosis Meeting.—The annual joint meeting of the Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Sanatorium Association will be held in Cedar Rapids, Iowa, September 27-29, at the Hotel Montrose. In a symposium on the pathology of tuberculosis the following physicians will take part: Drs. Frank P. McNamara, Dubuque, Iowa; Charles A. Doan, Columbus; Samuel A. Levinson, Henry C. Sweaney and Richard H. Jaffe, Chicago, and Harold E. Robertson, Rochester. Dr. Henry Kennon Dunham, Cincinnati, will conduct an x-ray clinic Thursday evening, and among physicians who will deliver addresses are:

Dr. Nathaniel G. Alcock, Iowa City, Genito-Urinary Tuberculosis.

Dr. Michael H. Ebert, Chicago, Clinical Types of Skin Tuberculosis and Their Biological Significance.

Dr. Jacob J. Wiener, Bedford Hills, N. Y., Status of the Tuberculous Patient Following Discharge from the Sanatorium with Medical Treatment Episodes and Collapse Therapy.

Dr. Frederic Maurice McPhedran, Philadelphia, The X-Ray Film in Pulmonary Diagnoses—Standardization of Technic and Apparatus.

At the annual banquet Friday evening speakers will be Drs. Walter L. Bierring, Des Moines, President of the American Medical Association, and H. Kennon Dunham, Cincinnati, president of the National Tuberculosis Association.

Government Services

U. S. Public Health Service

Passed Asst. Surg. Harold D. Lyman, relieved at Windsor, Ont., Canada, and assigned at the Relief Station, Washington, D. C.

Passed Asst. Surg. Waldemar C. J. Dreessen, relieved at Washington, D. C., about September 15, and assigned at New Orleans (Algiers).

Passed Asst. Surg. Cassius J. Van Slyke, relieved at Chicago and assigned at Ellis Island.

Sr. Surg. Grover A. Kempf, relieved at Berlin, Germany, and assigned to Washington, D. C.

Surg. Paul D. Mossman, relieved at Albuquerque, N. M., and assigned at the marine hospital, Ellis Island.

Surg. Frank V. Meriwether, relieved at New Orleans and assigned at the marine hospital, Ellis Island.

Drs. Frederick J. Brady and Thomas H. Tomlinson Jr., have been appointed and commissioned as assistant surgeons in the regular corps of the service.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 25, 1934.

A Large City Without Fatal Automobile Accidents

While automobile traffic continues to take a terrible toll, which in spite of every effort of the authorities tends to increase, the shipping and industrial town of Sunderland, with a population approaching 200,000, is able to announce that it has no deaths from automobile traffic. This surprising result caused the minister of transport to inquire of the mayor the reason for the freedom of the town from fatal accidents. His answer shows that the reason can be given in one word—education. For a considerable time the police have given particular attention to traffic problems and in a tactful way have exercised a control that has had the effect of reducing unnecessary fast driving. Cautions, written and verbal, have been issued when necessary and only in serious cases, now reduced to a minimum, have proceedings against drivers been taken. By means of a local "safety week" the public has been made aware of the seriousness of the position as regards road accidents resulting from carelessness. Warning posters are displayed on boards made by members of the fire department. Transparencies bearing a warning are given to drivers and affixed to windshields and windows of all types of automobiles. The theaters show a slide two or three times daily bearing advice on the avoidance of accidents. Instruction in safety first principles is given in schools throughout the year. During three or four periods of the day the police assist across the street children going to and coming from school. This has a most beneficial effect in training the children to be careful in crossing the street. When the schools reassemble after the holidays, 20,000 warning leaflets will be distributed by the police to children between 6 and 13 years of age. The shop keepers and other residents of the town display warning posters issued by the National Safety First Association. It is to be noted that this praiseworthy effort has not produced any undue slowing or congestion of traffic.

The Dangers of Sewers

From time to time fatalities occur among men working in sewers. Some of the larger authorities issue fairly comprehensive instructions for this work, but there is a want of uniformity. As no investigation had been made by any government department or advice issued, the Ministry of Health a year ago appointed a committee to inquire into the subject. In the report it is pointed out that the dangers to men entering sewers or sewage tanks are of two kinds: (1) flooding and (2) gases. As a precaution against the former, bars or chains should be provided at all manholes in sewers, so that they can be fixed across the sewer below the point at which the man is working. Gases are classified as asphyxiating, poisonous and inflammable. The composition of air in sewers usually differs little from that of the outside atmosphere, but it may be much modified by stagnation in the sewer, due to structural defects, or by the admission of gases or liquids which readily vaporize. When stagnation occurs, the solid matter undergoes fermentation and absorbs oxygen from air in the sewer. If there is little ventilation, the evolved gases gradually displace the air, so that the sewer atmosphere becomes irrespirable from reduction of its oxygen content. Of the gases that gain admittance to sewers, coal gas is the commonest; but acetylene, from decomposition of unspent calcium carbide, is occasionally found. Either may give rise to an explosive mixture. Of the vaporizable liquids that enter sewers, inflammable wastes from dry cleaning works are occasionally encountered, but gasoline is by far the com-

monest and may cause dangerous explosions. In sedimentation tanks the gases to be feared are usually those produced in the early stages of fermentation: carbon dioxide and hydrogen sulphide; but in septic tanks they are those produced in the later stages: methane and carbon dioxide. The dangers of asphyxiation from irrespirable gases can be removed only by adequate ventilation of sewers and tanks. The greatest risk in this country is that of poisoning by hydrogen sulphide. The first and principal precaution is to prevent accumulation of sewage or sludge by cleaning out tanks and, when necessary, sewers at frequent intervals.

It is laid down that with reasonable care accidents should not occur. The tests and precautions for ensuring safety are simple and should be strictly observed. Before any man enters a sewer or tank it should be ventilated. Tests must then be made for hydrogen sulphide (by exposing lead acetate paper for five minutes), for asphyxiating conditions (by a safety lamp) and for inflammable gases (by a detector lamp). All the men should be versed in the tests, and a life line should be worn by the first man entering a sewer or tank until safety has been established. So long as any man is in a sewer, three manholes (the one entered and that on each side) should be kept open and two men posted at the entry manhole. Smoking and the use of naked lights should be forbidden. Rescue kits should be carried by every sewer gang and kept apart from the ordinary tools, the man in charge of the gang being responsible. It should include at least two life lines and one breathing apparatus.

Public Health Service Under Indian Administration

That the cessation of British rule and the establishment of self government has disadvantages of which those who clamored for self government appear to have been oblivious can be illustrated in various parts of the world. In a letter to the *Times*, Mr. C. L. Dunn, formerly a director of public health in the United Provinces, India, points out that, while there has been an increase in the number of hospitals and dispensaries since the health service was transferred to Indian Ministers in 1921, there has been a serious deterioration in the equipment of many hospitals and the qualifications for the personnel have been lowered. The United Provinces government reported on this deterioration in buildings and equipment to the Simon commission, and Mr. Dunn vouches for a decline in the standards of cleanliness, discipline and efficiency generally, which has taken place in many hospitals in the United Provinces. In Assam they have been reduced in number and their qualifications lowered. In Bombay, Bihar and Bengal, though there has been an increase in the local staff, the provincial public health personnel, there has been a lowering of qualifications. In the Punjab the provision is so scanty that there is only one health officer and one sanitary inspector for approximately every million of the population, and in 1931 a committee of the provincial council recommended the abolition of the entire public health department. In the Central Provinces this has actually taken place. In Madras a great many of the so-called health officers have very low qualifications and some no special health qualifications at all.

In the engineering branch of the public health departments there has also been a setback. In 1921 each major province had a special branch of this kind, responsible for drainage, water supplies and other sanitary works and staffed by well qualified engineers. Progress in the introduction of drainage schemes, water supplies and other services was continuous. But since 1921 the great majority of qualified engineers doing this work have been dismissed and replaced by unqualified Indian operatives. As a result not only has progress stopped but many local bodies have failed to maintain existing drainage schemes and waterworks in repair. Waterworks are continually breaking down, even in important cities and nuisances caused by defective drainage are almost unbelievable.

The main cause of all this deterioration is the maladministration of local authorities, to which convincing testimony is borne year after year in the reports of provincial governments. So little recognition is there of the value of efficiency that in one province the superintending engineer of the public health department was censured by the legislative council for reporting the facts, and the minister under whose authority the report was printed undertook that the officer should be asked to modify his report. Any good work that is being done, such as the inauguration of maternity and child welfare activities and missions to lepers, are due to voluntary agencies and receive little help from the governments.

Deafness Caused by Pneumatic Drills

The antinoise campaign has been described in previous letters. Local authorities in London are considering the adoption of silencers for pneumatic road-braking machines on account of the protests made by hospitals and the public in residential areas. A pneumatic drill probably creates more noise than any other device used in the streets of London, and experiments have been in progress for some time to mitigate the nuisance. Silencers have been brought to the notice of the local authorities and in some cases taken up by them. But the contractors object to their use because of a small loss of efficiency. It has been found that about three fourths of the noise produced is due to the "bark" of the exhaust air after compression, and all attempts to muffle it produced prohibitive back pressure in the drill, with consequent loss of power. The latest type of silencer is claimed to lessen the noise of escaping air by 60 or 70 per cent, with a loss of well under one tenth in efficiency. Apart from the effect on the nerves of the public, the noise of the unsilenced drills in time produces partial deafness in nearly all those who work them.

Research on the Storage of Food

The progress made by research on the transport and storage of fish, fruit and vegetables is shown in the annual report of the Food Investigation Board, which has just been issued. The work was undertaken with the object of improving the food supply of Great Britain. It was found that fish can be kept in good condition aboard a trawler in crushed ice for as long as ten or twelve days. For trawlers that make trips involving long absence from port, the exact conditions for brine freezing and cold storage of the common sorts of white fish were worked out. Work has been done on the herring with the aim of improving the smoking of this fish by defining the conditions required for producing kippered herrings of high quality. It was found that if herrings are rapidly frozen in brine and stored at a low temperature they will retain their quality for a considerable period. Kippers made from them after four months' storage are barely distinguishable from those made from the freshest fish.

CHILLED MEAT

The trade in frozen mutton and lamb has been thoroughly investigated in cooperation with various interests in New Zealand and Australia. The most important advance as regards beef was the demonstration on a semicommercial scale by the Low Temperature Research Station that it can be held in perfect condition in a chilled state for as long as sixty or seventy days in an atmosphere containing from 10 to 20 per cent of carbon dioxide. Provided the necessary gas tightness can be secured in the refrigerated spaces of ships, Australia and New Zealand can send their beef to the United Kingdom in chill. Recently the Low Temperature Station showed that bacon and pork can be stored successfully for considerable periods in high concentrations of carbon dioxide. This is

important, as bacon cannot be stored successfully for any length of time merely by the use of cold, and consequently it has not been feasible to import it from Australia and New Zealand.

GAS STORAGE OF FRUIT

Much of the board's work, especially on fruit, cannot find its full application unless it is accompanied by parallel work overseas. Successful cold storage of fresh fruits depends on a number of factors. Different varieties do best at different temperatures. The work on the gas storage of fruits is of more value to the home than to the overseas producer. Remarkable individuality was found in the response of different varieties of English apples to atmospheres containing different proportions of oxygen and carbon dioxide. In the present state of knowledge it is impossible to foretell how a particular fruit or a particular variety of fruit will respond to an abnormal atmosphere of given composition. It is thus essential to ascertain by trial the exact requirements of the fruit in question. But the general principle of gas storage has been shown to be beyond dispute, though its possibilities as an alternative to cold storage are largely unexplored.

British Medical Association to Meet in Australia

The 103d annual meeting of the British Medical Association will be held in Melbourne next year during the week beginning September 9, under the presidency of Sir Richard Stawell, consulting physician to the Melbourne Hospital and to the Children's Hospital, Melbourne. The work of the meeting will be divided into fourteen sections, and it is noteworthy that the presidents of these are in all cases drawn from Great Britain: Lord Horder, medicine; Sir Thomas Dunhill, surgery; J. S. Fairbairn, obstetrics and gynecology; A. E. Barclay, radiology and radiotherapeutics; Robert Hutchison, diseases of children; Prof. Edwin Bramwell, neurology and psychologic medicine; Prof. E. W. Hey Groves, orthopedics; F. F. Muecke, otorhinolaryngology; Prof. A. Murray Drennan, pathology and bacteriology; Sir H. J. Gauvain, public medicine, including tuberculosis, industrial and tropical hygiene, and the history of the development of medicine in Australia; J. M. H. Macleod, dermatology; E. K. Le Fleming, medical sociology; A. J. Ballantyne, ophthalmology, and Sir William Willcox, pharmacology, therapeutics and anesthesia.

PARIS

(From Our Regular Correspondent)

Aug. 1, 1934.

The International Congress of Neurologists

The fourteenth International Congress of Neurologists was held in the Salpêtrière Hospital, in the amphitheater in which Charcot taught. Dr. Vurpas delivered the opening address, on "The Method to Follow in the Observation and Coordination of Neurologic Facts." The question discussed was "Study on the Vegetative Centers in the Mesencephalon." Mr. Laruelle of Brussels presented a paper on the anatomy of the median diencephalon and of the upper centers of the region that forms the wall of the third ventricle, and discussed the various cell types, the topography of the nuclei, and the question of vegetative localization. He opposes the view of Karplus and Kreidl and holds that the vegetative centers are not restricted to the diencephalon but extend upward toward the cortex.

J. Lhermitte discussed the rôle of the hypophysis and the anatomoclinical syndromes ascribable to the hypothalamic vegetative apparatus. He suspects the existence in the hypothalamus of a double polarity, one of a nervous order and the other of a hormone nature. Thus one can differentiate, on the one hand, the syndromes of hypophyseal origin (acromegaly, gigantism, Cushing's disease, Simmond's disease or hypophyseal cachexia), and, on the other hand, syndromes involving the tuber cinereum and the infundibulum: diabetes insipidus, narcolepsy, obesity and lipodystrophies, adiposogenital syndrome, premature sexual development, and the like. He discussed the possible relations between the genital glands and the hypothalamus in hematopoiesis and considered the relations between the hypothalamus and epilepsy, and its influence in certain mental disorders. Passing over such vegetative disorders as salivary, sudoral, lacrimal and sebaceous hypercrinias, arterial hypertension and peptic ulcers, he emphasized merely from what angles study of these questions should be pursued: physiologic specificity of the centers revealed by histology in the diencephalon, nature of the lesions provocative of the syndromes observed, and their grouping under general syndromes. Many members of the assembly (Nicolesco, Marinesco, Façon, Bruch, André Thomas, de Martel, Ayala and others) reported observations of cases illustrating the pathology of the hypothalamus. André Thomas contributed a paper on thermic regulation and the part played therein by the region of the infundibulum and the tuber cinereum, basing his contentions on experimental tests and on numerous anatomic observations. Cerebral tumors, for example, may be revealed by certain febrile disorders. But the tumors are not always localized in the region of the infundibulum and the tuber cinereum. Surgical hyperthermia appears associated particularly with disequilibrium of intraventricular pressure and possibly with a reaction of the choroid plexuses. In epidemic encephalitis thermic disorders exist, and their lesions are distributed, by a process of selection, throughout the diencephalon and the mesencephalon. In fact (according to Thomas), one cannot define the rôle of the region of the tuber cinereum and the infundibulum toward thermoregulation or fever without including many other regions of the neuraxis that cooperate with it. If the tuber cinereum exerts a preponderant influence such that it can be accorded the significance of a brain center, it must be recalled that more or less remote lesions may modify the thermic curve, either by acting at a distance on the infundibulum or by some other mechanism. Aside from experimental research, one must recognize that most observations based on pathology supply arguments of probability rather than of certainty in favor of a center in the tuber cinereum or the hypothalamus.

French Assembly of General Medicine

The twelfth session of the French Assembly of General Medicine was devoted to a study of the dietary habits of certain regions with relation to the public health. The communications furnished by the physicians of the provinces constitute a remarkable survey of the various types of alimentation, from which results the local predominance of various types of diseases of the digestive tracts and of organic disorders. For example, gout and urinary lithiasis are unknown in the peasants who drink only cider. On the other hand, the latter are more exposed to poor dentition and to gastric ulcer that may lead to cancer. The war served to increase in the rural districts the consumption of meat, to which the peasants became accustomed during their service in the army. The conclusions that summarize the discussions and that were unanimously accepted by the assembly were the following: The diet of the French people is usually ample. An inadequate diet is found chiefly in hovels but also among the well-to-do classes through ignorance of what constitutes a suitable diet, and, particularly among the women, owing to the fear of losing their slender figures. Physical education and sports, which are increasingly favored, have a tendency to establish a more rational diet. Alcoholism is less frequent among the younger generation, which is disciplined by athletics and the various sports. Hygiene has left its marks on puericulture. Cholera infantum has become a rarity and has ceased to be the social scourge it was a number of years ago. In the remote rural districts this result

appears to be due to the action and instruction of the family physician. The assembly called to the government's attention four points that are important: 1. The bread is frequently of poor quality and poorly baked. There is unanimous opposition to bread containing chemical products. 2. The supervision of milk is inadequate. Milk from poorly nourished and unhealthy cows should be rejected. 3. Rural school children are often puny because they lack suitable lunches and are reduced to one warm meal a day, and that in the evening. 4. Physicians demand that the government supervision, which has proved effective for oysters, be extended to other types of shellfish, and that the raising of bivalves in waters into which sewers empty shall be prohibited.

Monument to Dr. Roux

The monument erected to the memory of Dr. Roux in the gardens of the Hôpital des enfants-malades was dedicated recently in connection with the holding of the international congress of French-speaking pediatricians in Paris. The monument consists of a large low relief, the work of the sculptor Rouche, which represents the eminent scientist in his laboratory examining a microscopic specimen. At the dedicatory ceremonies Dr. Martin, who was the collaborator of Roux at the Institut Pasteur in his discoveries of antidiphtheritic serotherapy, gave a biographic sketch of the scientist, interspersed with personal reminiscences, while Professor Marfan emphasized the importance of this discovery. The ceremonies were attended by many official delegates.

BERLIN

(From Our Regular Correspondent)

July 30, 1934.

Hereditary Cutaneous Diseases and Consent to Marriage

In an address before the medical society of Frankfort-on-Main, Schmidt-La Baume warned against exaggeration in the medical consultations on marriage. Only a small number of hereditary diseases are of practical importance. In research on these diseases, race, family and twin relationships constitute excellent research material. In studying familial pathology, great caution must be exercised, as some diseases must have left traces in almost every family tree. A common source of error is the inaccuracy of statements with regard to family trees. One must distinguish carefully between medical diagnoses and statements derived from the family history. If a certain disease is dominant, it is more important to study complete groups of siblings than to search through a large number of generations. Many siblings, however, do not attain the age in which the disease appears. It will be understood that recessive diseases are not recognized until late as hereditary diseases. A denial, by the consultant, of approval of a contemplated marriage should be based only on absolutely certain results of hereditary research.

The attempts to build up a rigid system characterizing the various hereditary diseases are still rudimentary. Among the large number of cutaneous diseases many eliminate themselves, many others are rare and many are not so important, as the damage they cause is slight. For example, the presumably dominant varices are not sufficient reason for withholding consent to marriage. Of importance are chiefly bullous conditions, keratoses and blastomas. Of the bullous conditions, especially epidermolysis dystrophica and epidermolysis simplex deserve attention, hereditary transmission in the latter case being dominant and in the former recessive. If the family history of a candidate for marriage shows these diseases, the medical consultant may with justice advise caution or actually prohibit marriage. According to the literature, pemphigus vulgaris is hereditary; but since it will be impossible to find a family tree that furnishes unequivocal proof of this contention, it is not a valid reason for refusing consent to a marriage. In the case of light dermatoses, hereditary influences have been demonstrated with certainty; hence consent to marriage should under all circumstances be withheld. Folliculoses and hidroses have only a cosmetic interest; it should, however, be emphasized that acne vulgaris is of a highly hereditary nature. Ichthyosis congenita is of a recessive hereditary nature; the new-born with this disorder usually die from its effects. Keratoma palmare, which renders patients incapable of doing any form of manual work, is of a pronounced hereditary type. Xeroderma pigmentosum is a severe type of disease that usually leads to the formation of malignant tumors; marriages between persons with too high a degree of consanguinity are frequently associated with this condition. In the family trees one finds a morbidity of 25 per cent; there is evidence therefore of a typically recessive disease. In the three last named diseases, permission to marry should be refused under all circumstances. Of the anomalies affecting the males, onychogryposis and anonychia are of a dominant hereditary nature; but these conditions do not assume an important rôle in connection with consultations on marriage.

Malignant tumors are by no means uniform in their hereditary aspects. Recklinghausen's disease is sometimes dominant but not regularly so; sterilization is demanded in some quarters. Psoriasis, or at least the predisposition to it, is of a dominant hereditary nature; however, in only one case out of seven does the person thus menaced develop the disease. There is no adequate reason to warn a person thus menaced against marriage. Infectious dermatoses are not of practical importance in this connection. An urgent warning is uttered against exaggerations with reference to cutaneous disorders in connection with heredity, and great caution should be observed in the matter of withholding consent to marriage.

As far back as the closing years of the last century, an international congress in Paris demanded prohibition of marriage in the presence of venereal disease. The consultation centers for venereal patients are not much frequented. The crusade against venereal disease must be carried on in an entirely different manner than in the past. The preliminary instruction should be given in the upper classes of the common schools. In contradistinction to gonorrhea, syphilis is exceedingly important for posterity. If syphilis is treated in the primary stage, a negative serologic test must be demanded over a period of two years. But if syphilis is not treated until the secondary stage is reached, not only the serum test but also examination of the cerebrospinal fluid must be negative for at least five years before consent to marriage can be given. In connection with the examination, it must be borne in mind that malaria may induce a positive Wassermann reaction. In the case of congenital syphilis, this test cannot be influenced by treatment but sometimes becomes negative spontaneously after a period of years. In the presence of neurosyphilis and/or a visceral involvement, marriage must be prohibited under all circumstances, the candidates for marriage being informed of the exact situation. The greatest caution should be used toward all new antisyphilitic remedies, for the complete testing of their efficacy must be extended over generations. Until such extensive research has been completed there is no question of a serious competitor of arsphenamine. It cannot be too strongly emphasized that a person with syphilis is an absolutely unsuitable partner for marriage.

Moral Offenses During the Postwar Period

According to extensive research by Dr. Julier, the number of offenses against good morals recorded for 1913 (18,862 cases) has not been equaled in any year (up to 1930) since the war. In 1926 the total was 16,441, following which a retrogression

set in, the total number for 1930 having been 13,630. The first year after the war (1919), a marked reduction in the total number of recorded offenses is observable, but the reduction is due to postwar laxness in following up cases and hence permits no conclusions with reference to real conditions. The figures for incest reached the peak for the prewar period in 1913; from 1919 on they showed a gradual increase and reached their postwar peak in 1925. The underlying cause cannot be unemployment, for this crime shows a high incidence also in the rural districts. Incest with violence applied to children shows an almost uninterrupted increase, with its peak in 1926, and continues then along about the same level, which corresponds to the prewar figures. Exhibitionism reached its peak in 1926, which was followed by a considerable decline. Homosexual crimes of men increased markedly between 1921 and 1924 and then declined. On the other hand, the increase of cases of abuse of authority by guardians, private educators and others is due mainly to ethical deterioration following a period of reduced sense of moral responsibility. In 1930 there were recorded 244 such cases, as against 130 in 1913. As to the participation of juveniles themselves in such crimes, incest accompanied by violence exceeds among male juveniles all other punishable offenses in frequency and, in particular, far exceeds the incidence of criminal moral offenses among female juveniles. In these statistics, however, it must be borne in mind that official statistics comprise only cases in which a sentence was imposed by the court of first instance, so that the numerous offenses committed by unknown persons, the acquittals, the withdrawals of charges, and cases in which secrecy was observed for moral reasons, are not included.

Reorganization of the Public Health Service

In the reorganization of the public health service, which has frequently been discussed in these letters, the federal government has adopted new measures. In the past, in the various *länder* of the German reich, the administration of the public health service was in the hands of government health officers, which were linked up with the lower administrative bodies. In view of their multiplicity of tasks, the health officers were unable to satisfy the constantly increasing demands, particularly as regards the providing of financial aid for those in need of welfare care and treatment, so that the communes turned over to their own communal physicians the task of securing financial aid and treatment for the needy, and also the officers of the social insurance system and of the organizations for the care of war victims began to appoint their own confidential physicians. Other centers, then recognizing the importance of health values for the people, began to be active in this field. But the fact cannot be ignored that these tasks require a uniform administration. The law that goes into effect, April 1, 1935, furnishes the basis for such reorganization. This law provides that, for the uniform administration of the public health service in the cities and rural districts, bureaus of health shall be created and directed by government health officers. The duties of these bureaus are: (1) execution of the medical tasks of the sanitary police; administration of hereditary and racial matters, including consultations on marriage; enlightenment of the people in hygienic subjects; care of the health of school children; consultation services for mother and child; welfare aid for the tuberculous, for venereal patients, for persons with physical handicaps, for invalids and for drug addicts; (2) medical cooperation in measures for the promotion of proper care of the body, including physical exercise, and (3) the activities of the health bureaus, the courts and the confidential physicians, so far as they are entrusted to the health officers. In addition, further duties of the character of those of confidential physicians may be assumed in the field of social insurance; that is, in the krankenkassen and the like. The hospitals, the sanatoriums and the convalescents' homes, on the other hand, are to remain under the same administration as before. These bureaus of health are government institutions, toward the support of which the cities and the rural districts will contribute. In some instances, existing institutions of the cities and rural districts will be allowed to take over the functions of the newly created bureaus of health, in which event the central government will contribute to their financial upkeep, since, in general, the reich contributes to the support of the public health service. The bureaus of health are also empowered to charge fees, in accordance with a fee schedule to be established by the federal minister of the interior. In short, this new law will effect a uniform reorganization of the public health system under the direction and general supervision of the federal minister of the interior.

BUDAPEST

(From Our Regular Correspondent)

Aug. 17, 1934.

Celebration of the Professorship of Emile de Grosz

Dr. Emile de Grosz, professor of ophthalmology at the University of Budapest, president of the International Trachoma Committee and leader of the Budapest postgraduate medical courses, solemnized the thirty year jubilee of his professorship. Since January 1904 he has been head of the Budapest eye clinic. For this occasion his pupils edited a souvenir volume. During these thirty years, 659,068 outpatients have attended his clinic, while the number of inpatients amounted to 52,032.

The ruling principle at his clinic is the motto of his predecessor, the celebrated clinician Arlt: "Salus aegroti suprema lex esto." In his clinic the welfare of the patient is supreme, and the didactic feature is secondary. The main requirement of practical medical teaching is that the behavior of the teacher with the patients should serve as an example to the students.

During the thirty years, 4,326 glaucoma patients were admitted to the hospital and more than 10,000 glaucomatous outpatients were attended at the clinic. Of the patients admitted to the hospital, 18.6 per cent had no light sensation at all, and the rate is still higher among the outpatients.

In the development of his clinic, Professor Grosz has paid particular attention to the development of a library. The grant for this purpose from the ministry was inadequate, and Grosz had to look for another source of money to be able to augment the library. Eventually this was found in fees paid to him by the so-called extra patients attending the clinic. In the jubilee booklet, Professor Grosz complains of the high prices of books and periodicals, rendering difficult their purchase. He mentions one book, the "Kurzes Handbuch," each volume of which costs 185 marks, the whole work of seven volumes 1,780 pengös (about $510), for which sum quite a nice little house can be purchased in one of the suburbs of Budapest. The subscription to German ophthalmologic periodicals varies between 60 and 120 marks.

The clinic has a complete library of rare books on the work of ophthalmologists. Most precious among them are Jacob Schalling's "Ophthalmia sive disquisitio hermetico-gallenica de natura oculorum," which appeared in German and Latin in 1615 in Erfurt; Georg Bartisch's "Augendienst," published in Dresden in 1583, which, as the first ophthalmologic manual, reached three editions; and a valuable book, Vopiscus Fortunatus Plempius's "Ophthalmographia sive tractatio de oculo," the first edition of which appeared in 1632 in Amsterdam. A curious book is that written by Laurentius Heister, professor of surgery and anatomy at the University of Altdorf, "Apologia . . . de cataracta glaucomate . . . contra Wolhusii" (1717). This book was written by Heister in defense of his earlier published book against Woolhouse, a contemporary English physician.

De Grosz's eye clinic is equipped with a modern bacteriologic and serologic laboratory, a pathologic-histologic section that attracts many distinguished foreign guests. During the course of last year prolonged studies in the latter laboratory were made by O. Schöpfer of Tübingen and S. R. Gifford and T. D. Allen of Chicago. During the course of the past thirty years more than 300 publications of pathologic reference appeared, mainly in foreign medical journals, written by the staff of de Grosz's clinic. An integral part of the clinic is the optical laboratory, which is a museum of optical instruments. All scientific optical instruments can be found here. The teaching staff of de Grosz's clinic consists of one adjunct, three assistants, three salaried juniors, three unsalaried assistants and five unsalaried juniors. The number of students who attended Professor de Grosz's lectures during the thirty years was 8,763. The attendance was greatest in the second session of the 1918-1919 school year, 708, and the smallest, 117, in 1928-1929.

QUEBEC

(From a Special Correspondent)

Aug. 30, 1934.

Celebration of the Fourth Centenary of the Discovery of Canada

To add to the ceremonies organized by the Canadian government for the celebration of the fourth centenary of the discovery of Canada by Jacques Cartier, the thirteenth Congress of French-Speaking Physicians of North America held a joint session with the twenty-third annual Congress of the French-Speaking Physicians of Europe, which convenes alternately at Paris and in some large city of Belgium or Switzerland. The joint congress was attended by 143 French physicians, five of them professors at the Faculté de médecine de Paris, under the conduct of Prof. Emile Sergent and Prof. Henri Hartmann; several professors from Lyons, Bordeaux and Marseilles; a number of physicians and surgeons from the hospitals of Paris and the provinces, and a group of Belgian and Swiss physicians. Likewise a number of physicians from the United States, including Prof. Max Einhorn of New York, were in attendance. The chief topics considered were "Pancreatitis," "Hypoglycemic States" and "Pyretotherapy." On the opening topic (pancreatitis) papers were presented by Albert and Jean Lesage of Quebec, Professors Cade and Ravault of Lyons, and Rambeaud and Albert Puech of Montpellier. P. Brocq, surgeon to the "hôpitaux de Paris," and Professor Bérard of Lyons gave an account of their studies on the surgical treatment. It appears that pancreatitis, in the first stage of edema, sometimes clears up spontaneously. Einhorn shared that view and reported successful results obtained with duodenal intubation. Brocq questioned these results, however, and expressed his doubts as to whether a true case of pancreatitis was involved. On the second topic (hypoglycemic states), Prof. Marcel Labbé of Paris, Dr. Jean La Barre of Brussels and Professors Lemieux and S. Leblond of Ghent furnished three papers describing the rôle played by the various endocrine glands. The third topic (pyretotherapy) was considered by Charles Richet Jr. of Paris, Henri Roger of Marseilles, and Fribourg-Blanc, A. Halphen and Jacques Auclair of Paris, the last two speakers dealing chiefly with the use of short waves and diathermy. The diseases in which pyretotherapy has been tried during recent years were reviewed, including dementia paralytica, septicemia, gout and diabetes. The speakers emphasized that the results of pyretotherapy are rather uncertain, being sometimes most remarkable and sometimes temporary or even almost nil, without any assignable reason to explain the widely different therapeutic effects. The subject is still controversial, and extended experimentation will be necessary to clarify the situation. The numerous unofficial communications dealt with widely different subjects, as is usual. International congresses with too extensive programs are like vast expositions to which every one brings his product and at which attention is generally dissipated. They are clearing houses for medical ideas. To get the full value of attendance at such a congress, a report of the proceedings should be read later. The sessions, which lasted four days, were held simultaneously in two different auditoriums. In addition, every morning, in five hospitals, lectures were delivered by eminent foreign specialists, French or Belgian. Particular attention may be called to the lectures of Prof. Pierre Duval on "Postoperative Azotemia," of Professor Hartmann on "Stenosing Rectitis," of Professor Fiessinger on "Les gros foies de surcharge," of Professor Sergent on "The Results of Thoracoplasty and of Phrenicectomy," of Dr. Oscar Mercier on "The Diseases of the Neck of the Bladder," and of J. N. Lavergne on "The Diagnosis of Hydronephrosis."

Emphasis was laid on research on tuberculosis. Professor Arloing of Lyons presented a study on the avian bacillus and the tuberculous virus, while Dr. Edouard Morin offered a paper on the same subject. A special section was devoted to mental hygiene and to psychiatry, to which the Canadian physicians made important contributions. The congress, which was presided over by Prof. Albert Paquet of Quebec, was the occasion for many social functions. On the opening day the foreign conventionists proceeded to the cemetery for the purpose of depositing floral wreaths on the tomb of Prof. Arthur Rousseau, who had been chosen to preside at the congress but who died several months ago. A eulogy in his memory was delivered by Prof. Emile Sergent.

Marriages

MALVERN BRYAN CLOPTON, St. Louis, to Mrs. Rachel Lowe Lambert of Princeton, N. J., in Rindge, N. H., July 10.

JOHN SASSER MCKEE JR., Morgantown, N. C., to Miss Betty Ambler McGill of Appomattox, Va., June 30.

JOHN RICHARD SHANNON MAYS, Macon, Ga., to Miss Geraldine Barrett of Hendersonville, N. C., June 2.

ANDREW MUNCY GROSECLOSE, Roanoke, Va., to Miss Mary Katherine McLaughlin of Richmond, July 5.

HERBERT STEPHAN DIECKMAN, Evansville, Ind., to Miss Ona Emily Boyd of Indianapolis, May 24.

HENRY SOFOROUS BOURLAND, Drexel Hill, Pa., to Miss Inez Reeves at Bradford, Iowa, June 22.

HENRY PERRINE COLMORE, San Juan, P. R., to Miss Mary Virginia Thomas of New York, June 23.

FRED GLENN DE BUSK, San Francisco to Miss Maurine A. Jenkins of St. Paris, Ohio, June 17.

THOMAS CYPRIAN LAWFORD to Miss Doris Louise Petty, both of Hilton Village, Va., July 7.

JOHN MARSHALL WINKFIELD, Strasburg, Va., to Miss Mary G. Boland of Reading, Pa., July 2.

CHARLIE FRANK MANGES to Mrs. Susie Robinson Ware, both of Blacksburg, Va., July 2.

MATTHEW J. BOLAND, Hamburg, Pa., to Miss Eleanor Mundy of Tamaqua, May 31.

ORVILLE LINDSAY ABBOTT, Bellflower, Ill., to Miss Truth Kirk at Bloomington, June 16.

ARTHUR WILLIAM ABTS to Miss Frances Reinhart, both of Humphreys, Neb., June 15.

GALITAN NEWTON WILSON to Mrs. Louise Amiott, both of Vernon, Texas, June 16.

WILLIAM DEVITT, Allenwood, Pa., to Miss Lida Wendle of Lewisburg, recently.

HUGO ALFRED AULER to Miss Mary Blanton, both of Austin, Texas, June 12.

VIRGIL C. DAVES, Vienna, Ga., to Miss Henrilea Gross of Alamo, June 3.

MARK DANIEL to Miss Evelyn Lipkin, both of New York, recently.

Deaths

William Campbell Posey ✠ Radnor, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1889; Chairman of the Section on Ophthalmology of the American Medical Association, 1909-1910, and at one time member of the Advisory Committee on Trachoma Among the Indians; member of the American Academy of Ophthalmology and Oto-Laryngology; member and past president of the American Ophthalmological Society; fellow of the American College of Surgeons; since 1922 member of the board of directors of the National Society for the Prevention of Blindness; formerly professor of diseases of the eye, Philadelphia Polyclinic; for many years on the staffs of the Wills Hospital, Howard Hospital, Children's Hospital and the Chestnut Hill Hospital, Philadelphia, Abington (Pa.) Memorial Hospital and the Westerly (R. I.) Hospital; co-author of "Treatise on Diseases of the Eye, Ear, Nose and Throat," "The Eye and the Nervous System" and "The Wills Hospital of Philadelphia"; author of "Hygiene of the Eye"; aged 68; died suddenly, September 5, of cerebral hemorrhage while aboard the liner *Rex* en route to the United States from Naples, Italy.

William Cline Borden ✠ Lieut. Colonel, U. S. Army, retired, Washington, D. C.; Columbian University Medical Department, Washington, 1883; entered the army as an assistant surgeon in 1883; veteran of the Spanish-American War; was promoted through the various grades to that of lieutenant colonel in 1909 when he retired for disability in line of duty; returned to active service during the World War as chief of the surgical service, Walter Reed General Hospital, 1917-1919; member of the House of Delegates of the American Medical Association in 1904; professor emeritus of surgery, formerly dean, professor of surgery, medical ethics and histology, George Washington University School of Medicine; professor of military surgery, Army Medical School, and professor of surgical pathology and military surgery, Georgetown University School of Medicine, 1898-1907; a founder and fellow of the American College of Surgeons; surgeon in chief at the George Washington University Hospital, 1909-1931; aged 76; died, August 18, at his summer home in Chaumont, N. Y.

Maurice Fishberg ✠ New York; New York University Medical College, 1897; clinical professor of medicine, University and Bellevue Hospital Medical College, 1915-1928; vice president of the New York Academy of Sciences, 1909-1910; consultant to the Montefiore Hospital County Sanatorium, Bedford Hills, N. Y.; author of "Materials for the Physical Anthropology of the Jews," "The Jews—A Study of Race and Environment," and "A Treatise on Pulmonary Tuberculosis; aged 62; died suddenly, August 30, of heart disease.

Hugh Wilkinson ✠ Kansas City, Kan.; Rush Medical College, Chicago, 1901; past president of the Wyandotte County Medical Society; secretary of the Kansas City Southwest Clinical Society; fellow of the American College of Surgeons; served during the World War; surgeon to the Bethany Methodist Hospital; on the courtesy staff of St. Margaret's and the Providence hospitals; aged 57; died, August 14, of coronary thrombosis.

Joseph Baxter Emerson, New York; University of Virginia Department of Medicine, Charlottesville, 1876; member of the Medical Society of the State of New York and the American Otological Society; for many years on the staffs of the Englewood (N. J.) Hospital and the Manhattan Eye and Ear Hospital; aged 80; died, July 24, at the home of his daughter near Charlottesville, Va., of carcinoma.

Carl Ferdinand Bookwalter ✠ Chicago; Johns Hopkins University School of Medicine, Baltimore, 1910; assistant professor of oto-laryngology, Northwestern University Medical School; fellow of the American College of Surgeons; on the staff of the Passavant Memorial Hospital; aged 54; was found dead, September 10, in a hotel at Danville, Ill., of a gunshot wound, presumably self inflicted.

Paul Edward Allen, Cherokee, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1910; member of the Iowa State Medical Society; past president of the Cherokee County Medical Society; on the staff of the Sioux Valley Hospital; aged 51; died, July 2, of streptococcic infection.

Benjamin Alexander Owen ✠ Perry, Okla.; Maryland Medical College, Baltimore, 1905; also a pharmacist; past president and secretary of the Noble County Medical Society; county superintendent of public health; aged 59; died, July 17, in the Enid (Okla.) Hospital, of carcinoma of the pancreas.

Shirley Dan Folsom, Muscatine, Iowa; Hahnemann Medical College and Hospital, Chicago, 1917; member of the Iowa State Medical Society; served during the World War; on the staff of the Benjamin Hershey Memorial Hospital; aged 47; died suddenly, July 22, of acute dilatation of the heart.

Philip Charles Douress, Trenton, N. J.; Jefferson Medical College of Philadelphia, 1912; member of the Medical Society of New Jersey; served during the World War; police surgeon; on the dispensary staff of St. Francis Hospital; aged 46; was killed, August 30, in an automobile accident.

Charles Ernest Howard, Cogswell, N. D.; American College of Medicine and Surgery, Chicago, 1905; served during the World War; aged 54; died, July 29, in the Veterans' Administration Facility, Fargo, of chronic nephritis, cirrhosis of the liver and Korsakoff's syndrome.

Charles Hunter Drake, Birmingham, Ala.; Tulane University of Louisiana Medical Department, New Orleans, 1906; member of the Medical Association of the State of Alabama; served during the World War; aged 57; died, August 14, of chronic hypertension and hemiplegia.

Floyd McKennan Baldwin, South Pasadena, Calif.; Rush Medical College, Chicago, 1903; served during the World War; formerly operated a hospital bearing his name in Redfield, S. D.; aged 58; died, August 16, in the Palo Alto (Calif.) Hospital, of cerebral hemorrhage.

Henry Graham Bartlett, Benton Harbor, Mich.; Chicago Homeopathic Medical College, 1896; member of the Michigan State Medical Society; formerly health officer of St. Joseph; aged 64; died, August 21, of cerebral hemorrhage and mitral insufficiency.

George Curtis Ellis, Chicago; Rush Medical College, Chicago, 1918; on the staff of the Provident Hospital; aged 44; died, September 2, in the Albert Merritt Billings Hospital, of carcinoma of the rectum with metastasis to the liver.

Max Green, Philadelphia; Jefferson Medical College of Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; on the staff of the Mount Sinai Hospital; aged 64; died, August 19, of heart disease.

Leon Deville, San Diego, Calif.; College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1911; aged 60; died, June 7, of acute myeloid leukemia and bronchopneumonia.

Philip Benjamin Fry ✠ Benicia, Calif.; College of Physicians and Surgeons of San Francisco, 1902; past president of the Solano County Medical Society; aged 62; died, August 21, of fatty degeneration of the heart.

Frank Hinchey, St. Louis; Missouri Medical College, St. Louis, 1894; member of the Missouri State Medical Association; on the staff of the Missouri Baptist Hospital; aged 66; died, August 9, of heart disease.

William H. Wilson, Washington, D. C.; Howard University College of Medicine, Washington, 1907; clinical instructor in surgery at his alma mater; on the staff of Freedmen's Hospital; aged 51; died, June 27.

John Brockinton Pressley, Santa Rosa, Calif.; University of California Medical Department, San Francisco, 1882; aged 74; died, June 22, in the Santa Rosa Hospital, of chronic endocarditis and myocarditis.

Robert H. Harrison, Houston, Texas; Medical College of Ohio, Cincinnati, 1883; aged 73; examining surgeon to the Southern Pacific Hospital, where he died, July 14, of myocarditis and angina pectoris.

Charles Stuart Hutchison, Los Angeles; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; aged 60; died suddenly, August 4, of cerebral hemorrhage.

William H. Harris, Augusta, Maine; University of Vermont College of Medicine, Burlington, 1888; member of the Maine Medical Association; aged 72; died, June 13, of arteriosclerosis and nephritis.

Churchill Charles Franklin ✠ Trenton, N. J.; Harvard University Medical School, Boston, 1925; aged 37; died, July 25, in St. Francis Hospital, of tuberculous arthritis and pulmonary tuberculosis.

Henry Sumner French, St. Paul; University of Minnesota Medical School, Minneapolis, 1920; aged 41; died, August 2, in the Ancker Hospital, of injuries received when struck by an automobile.

Joseph Schofield Winters, Bessemer, Ala.; Louisville (Ky.) Medical College, 1890; member of the Medical Association of the State of Alabama; aged 67; died, August 5, of cerebral hemorrhage.

John Francis Cross, Yakima, Wash.; Creighton University School of Medicine, Omaha, 1921; member of the Washington State Medical Association; aged 39; died, June 29, of coronary thrombosis.

Peter V. Faucher, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1887; professor of materia medica and therapeutics at his alma mater; aged 69; died, July 3.

James Randall Wilder, Washington, D. C.; Howard University College of Medicine, Washington, 1888; aged 68; died, July 7, of chronic duodenal ulcer, stenosis and pulmonary edema.

Bernard Francis McDermott, Los Angeles; College of Physicians and Surgeons, Baltimore, 1897; aged 61; died, June 8, of cerebral thrombosis and chronic nephritis.

John Martin Helgesen, Beloit, Wis.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; aged 61; died suddenly, July 25, in Cassville, of cerebral hemorrhage.

William L. Higginbotham, Sherman, Texas; University of Tennessee Medical Department, Nashville, 1891; formerly a druggist; aged 77; died, July 13, of heart disease.

George Higginson, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1891; aged 69; died, August 15, of pulmonary abscess and Parkinson's disease.

Frank Hiram Edwards, Los Angeles; Chicago Homeopathic Medical College, 1895; Rush Medical College, Chicago, 1901; aged 61; died, August 17, of heart disease.

Edward Stephen O'Brien, San Francisco; Medical College of the Pacific, San Francisco, 1879; aged 80; died, June 1, of chronic myocarditis and bronchopneumonia.

Joe Elmer Widner, Chicago; Niagara University Medical Department, Buffalo, 1890; aged 65; died, July 31, of chronic nephritis, arteriosclerosis and myocarditis.

George H. Haas, Allentown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1887; aged 74; died, July 20, of carcinoma of the intestine.

Walter Louis Perrott, Palo Alto, Calif.; Cooper Medical College, San Francisco, 1898; aged 69; died, June 30, of myocarditis and cirrhosis of the liver.

Benjamin Blake Dutton, Hartfield, Va.; Washington University School of Medicine, Baltimore, 1872; aged 83; died suddenly, July 6, of heart disease.

William H. Snavely, Tampa, Fla.; Medical College of Ohio, Cincinnati, 1881; aged 82; died, July 26, of cerebral hemorrhage and arteriosclerosis.

Harbard Smith, Smithville, Ga.; University of Georgia Medical Department, Augusta, 1893; aged 74; died, July 12, of arteriosclerosis and uremia.

Bennett Clark Hyde, Lexington, Mo.; University Medical College of Kansas City, 1895; aged 62; died suddenly, August 7, of cerebral hemorrhage.

Charles Maynard Smith, Johnsonburg, N. Y.; University of Buffalo School of Medicine, 1888; aged 69; died, July 9, of paralysis agitans.

Robert Crosby, Vancouver, B. C., Canada; University of Toronto Faculty of Medicine, 1898; aged 64; died, July 5, of angina pectoris.

Alice Morgan Goss, San Francisco; Hahnemann Medical College and Hospital, Chicago, 1890; aged 78; died, June 26, of myocarditis.

Charles Stillman Mann, San Francisco; University of California Medical Department, San Francisco, 1890; aged 70; died, June 15.

Charles Sylvester Maguire, San Francisco; University of California Medical Department, San Francisco, 1893; aged 63; died, June 14.

James M. Hensley, Bellaire, Ohio (licensed in Ohio in 1896); aged 82; died, July 25, in Springfield, of cerebral hemorrhage.

L. Anna Ballard, Lansing, Mich.; Woman's Hospital Medical College, Chicago, 1878; aged 86; died, August 23, of angina pectoris.

Samuel A. Wright, Hallandale, Fla.; Northwestern Medical College, St. Joseph, Mo., 1883; aged 91; died, July 25, of uremia.

Harriet Herr, New York; Eclectic Medical College of the City of New York, 1889; aged 65; died, July 21, of uremia.

Charles Curtis Bliss, Pasadena, Calif.; Bellevue Hospital Medical College, New York, 1874; aged 83; died, June 26.

Frank Ellsworth Lane, San Diego, Calif.; Tufts College Medical School, Boston, 1898; aged 68; died, June 29.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TUBERCULIN TESTING AND INCIDENCE OF TUBERCULOSIS

To the Editor:—I have read with some interest your article on tuberculin testing, which appeared in Queries and Minor Notes in THE JOURNAL, May 26, and I feel that your comments are not sufficiently comprehensive. You have presented but one phase of a highly controversial subject and that, giving the view of what is probably a minority of those interested in this work.

All will agree that a person who reacts to tuberculin has been exposed to tubercle bacilli, but I question strongly that "seeking this source often results in finding an open case of tuberculosis" unless the reactor happens to be an infant or very young child, in which case, owing to the limited number of people with whom he comes in contact, it is frequently possible to determine such a source. But as the child grows older and his circulation among the population becomes wider, the possibility of detecting such a source becomes remote and in the case of adolescents and adults the task assumes such proportions as to require a spirit of investigation and a corps of searchers such as few could possibly possess.

Even when a definite tuberculous lesion is demonstrable in the child it is no simple matter to find the original source of infection at home. In a recent article Edwards (*Am. Rev. Tuberc.* **27:** 611 [June] 1933) states that, in the examination of the families of a large number of children who have been diagnosed as having tuberculosis of childhood, only a single case of adult pulmonary tuberculosis could be found.

It is true that "the positive test establishes the fact that the tissues are sensitive or allergic to the products of growth of tubercle bacilli," but it is by no means so certain, as is implied, that such people are more likely to develop tuberculosis and fare poorly because of this allergy. Quite the contrary view is held by many. You neglected to mention that many careful students of the subject, including Parke, Krause, Opie and Heimbeck, are convinced that there is developed within the individual simultaneously a relative degree of immunity to the disease and, if he should contract it, a certain amount of resistance.

In discussing this subject, Myers (*Am. Rev. Tuberc.* **27:** 121 [Feb.] 1933) quotes the work of Heimbeck, who showed that of 185 pupil nurses who had negative tuberculin reactions when they entered training fifty-three contracted the disease, whereas among 152 classmates who were positive but three developed tuberculosis. Surely this does not show any particular predilection for the disease among those who have had a previous experience with tubercle. The same author, Myers, in a previous publication (Recent Facts on Transmission of Tuberculosis, THE JOURNAL, Aug. 1, 1931, p. 316) describes seven cases that had recently come to his attention among nurses and medical students, none of whom reacted to tuberculin at the beginning of their training but who soon acquired the infection together with symptoms of the disease when they were assigned to a tuberculosis hospital. Obviously, the fact that they had not been previously infected was no asset to them; no mention is made of their classmates who had positive reactions, but probably their experiences were more favorable.

Opie (*Tr. Col. Phys. Philadelphia,* 1927) draws the conclusion that "Latent tuberculosis of childhood confers immunity against subsequent infection, but resistance is limited and transient. Pulmonary tuberculosis of adults is not derived from the disease of childhood, but it is the result of new infection and pursues a chronic course because some immunity induced by preceding disease still persists." Willis (*Am. Rev. Tuberc.* **17:** 240 [March] 1928) has shown in animal experimentation with the tubercle bacillus that relative immunity and resistance increased with the virulence of the organism, that they receded with healing of the infection but that they still persisted in latent form, and that they were immediately reactivated by reinfection. Such resistance is illustrated very effectively in those people who develop the exudative lesion described by Wessler and Jaches and who are able to heal it entirely, with an absence or minimum of symptoms; also in those with productive lesions which remained stationary or progressed slowly over a great many years, allowing the patient to lead a comfortable and useful existence.

I feel that it is decidedly objectionable to broadcast the statement that "the person who reacts positively to the test . . . is a potential case of a reinfection type of tuberculosis" because of the implication that such people are in danger of developing tuberculosis. It is true that no one possesses absolute immunity to the disease, but it has yet to be shown that those who have had a primary infection are more likely to succumb than those not so infected. It is contrary to the facts as they are known, else how explain the fact that in large cities, with an overwhelming proportion of the population infected, the mortality rates are so relatively low?

It is my impression that the amount of tuberculin generally used in testing is 0.1 mg. Assuming this to be the case, I think your statement "The dose of tuberculin used in testing school children causes no harm whatever, even if the child has a reinfection type of disease" is one to which many pediatricians would take issue, for the feeling is distinctly held by many that it may reactivate dormant bacilli and may cause a spread in active lesions. One not infrequetly observes a large local inflammatory area, sometimes even vesicle formation, at the site of inoculation, and a rise in temperature; it is reasonable to suppose that such local and constitutional reaction is coexistent with the stimulation of the original focus in the lung or hilus.

The views expressed in your answer are contrary to those held by many prominent phthisiologists. One would think that in discussing such a subject these opposing opinions should be stated in order to avoid presenting to the medical public one extreme view of a controversy.

In the article by Opie, previously referred to, he states that "the significance of the reaction diminishes with increasing age." It is widely taught that the tuberculin test is of value in infants and young children because of its aid in detecting primary tuberculous lesions and because it may thus help to point out an infecting adult; it is of value in older children because of its aid in detecting lesions, although in these children they are exceedingly benign as a rule; it is of value in adults because of its aid in excluding tuberculosis when negative; but when positive in an adult who shows no lesion on roentgen examination it is of no significance. It indicates only that at some period of life tubercle existed in the individual.

My object in writing this is not to urge that early tuberculinization of the entire population would solve all our problems but to call attention to the fallacy of the suggestion that the individual who shows a positive reaction is in danger of developing pulmonary tuberculosis. It seems to me that there is a more rational and reasonable middle path.

E. W. BILLARD, M.D., New York.

ANSWER.—There is a source of tubercle bacilli for every child or adult who reacts positively to the tuberculin test. If one makes careful observations, the positive test in a child often results in finding the open case of tuberculosis.

It is true that Edwards (*Am. Rev. Tuberc.* **27**:611 [June] 1933) found only one case of adult pulmonary tuberculosis in eighty-one families in which the first diagnosis was of a childhood form. However, he does not state how many previous deaths had occurred from tuberculosis in those families. Moreover, 45.5 per cent of the living members of those families were not examined. If all had been examined, and still only one case of open tuberculosis was found, it would have been worth the effort, since a single open case may transmit tubercle bacilli to hundreds of persons in a community. However, Edwards' group yielded a much smaller incidence of pulmonary tuberculosis than the groups studied by most other workers. For example, Rathbun (*Tr. Nat. Tuberc. A.*, 1929) made careful examinations of twenty-four families in which a school child was found to have the childhood type of tuberculosis. He found that in 54 per cent a parent was at that time ill with tuberculosis or had died of the disease, while in another 17 per cent parents had suspicious lesions.

There is no doubt that children rather often contract their disease from tuberculous patients outside their families, but even here when one seeks the source among school teachers and other associates one is quite frequently rewarded by finding it. Jordan has recently brought to light some interesting facts concerning the exposure of children by teachers. In fact, in his rural district he has found eleven teachers with frank tuberculosis, most of whom had never previously had their disease suspected. Seeking the source of the positive tuberculin reactor's lesion frequently takes the physician to the food handlers and other persons who come in contact either directly or indirectly with the public. It may also take him to the veterinarian, who sometimes finds the source among dairy cattle.

To be sure, the more recently the reaction makes its appearance, the easier it is to find the source. This is true not only of infants and children but also of adults who have been periodically negative to the tuberculin test. If the test is administered from every six to twelve months and it becomes positive, it is obvious that the exposure time is not far distant. It is much easier to trace the source in such a case than in one whose test has been positive for many years. Nevertheless a careful search should be made for the source of every positive tuberculin reactor.

Evidence is at hand to show that children who are sensitive to tuberculin are more likely to "develop tuberculosis and fare poorly" than those previously negative to the test. Myers has recently shown that among the first 1,000 children examined at the Lymanhurst School for Tuberculous Children in 1921 and 1922 of those who could be traced up to 1934, approximately one half had positive tuberculin reactions in 1921 and 1922 and the other one half reacted negatively at that time. Of the positive reactors traced, 9.65 per cent had or have since developed clinical tuberculosis, whereas only 1.08 per cent of those originally negative to the test have developed this form of disease. The average age of these children examined in 1921 and 1922 is in 1934 only 20.8 years. Therefore they have not attained the age when the greatest destruction occurs from tuberculosis.

Chadwick has found that children with positive tuberculin reactions and evidence of the first infection type of disease manifested roentgenographically provide five times as many clinical cases of tuberculosis within the next five years as those who had only positive tuberculin reactions on the original examination. It appears, therefore, that where actual observations have been made there is abundant evidence that the child with the positive tuberculin reaction, which always means a first infection type of tuberculosis, is not as good a risk as the child with a negative reaction. On the basis of what has already been observed, it is estimated that from 10 to 20 per cent of the children with positive tuberculin reactions will be found to have or will develop clinical tuberculosis before they reach the age of 45 years.

Therefore is it decidedly objectionable to broadcast the statement that "the person who reacts positively to the test . . . is a potential case of a reinfection type of tuberculosis"? No one has questioned the conclusions of Park, Krause, Opie, Heimbeck, Willis, Wessler and Jaches, and many others concerning the development of a relative degree of immunity in tuberculosis. In the previous communication the work of these authors was not omitted because of neglect but because it was assumed that their point of view is understood by all.

Attention was called to the work of Heimbeck, who showed that, of 185 student nurses who had negative tuberculin reactions when they entered training, fifty-three "contracted the disease," whereas among 152 classmates who were positive only three developed tuberculosis. In fact, all of the 185 who had negative reactions on admission contracted the disease before graduation; that is, they contracted the first infection type of tuberculosis, as manifested by a positive tuberculin reaction. In only fifty-three of them were there symptoms or demonstrable lesions by other phases of the examination. In fact, in thirty-seven erythema nodosum was present, in twenty-two pleurisy was present, and so on. In some, more than one symptom was present. Among those who had pulmonary infiltrations demonstrated, Heimbeck called attention to their characteristics, which were for the most part those of the first infection type of tuberculosis. Thus, this group of 185 girls largely because of their exposure to tuberculosis in line of duty went through in Dr. Heimbeck's presence what the 152 who entered his institution sensitive to tuberculin had gone through before they came to him. The three with positive reactions on entrance could develop only the reinfection and destructive type, which is a far more serious matter. Here the time interval comes into play also. The first infection type may be manifested within three weeks after exposure, yet the reinfection type may not develop to detectable proportion for months and even years after reexposure, so that the three cases in this class by no means represent the end of the story. Further follow up in the years to come will give a different outcome. This can be predicted, since sufficient numbers of cases have been followed now, and the course of their tuberculosis recorded, to justify an estimate of the ultimate morbidity.

The same oversight as to type of disease developed is true in the seven cases cited by Myers (THE JOURNAL, Aug. 1, 1933). As for statistics on the outcome of the two classes, that is, positive and negative reactors, the best study available is by Shipman and Davis (*Am. Rev. Tuberc.* **27**:474 [May] 1933), who showed that more students who entered with positive reactions fall ill within the next ten years than those who entered with negative reactions. Since the characteristics of the first infection type of disease are the same at all age periods, it is safe to assume that the outcome of the disease in students of nursing and medicine everywhere will approximate the outcome in the children examined at the Lymanhurst School, which has been cited; that is, positive reactors had or developed clinical tuberculosis in a ratio of 9 to 1 with negative reactors over a period of eleven or twelve years.

It would appear that the first infection type of tuberculosis has been looked on as a great protection to the body when in reality the natural protective mechanism of the body deserves most of the credit. If it were not for this natural protective mechanism of the human body, most certainly tuberculosis would destroy far more people than it does. When tubercle bacilli first enter the body and find lodgment in the tissues, there is no allergy present. Therefore there is no specific reaction on the part of the tissues. The focus of bacilli is met as that of a foreign body. The attempt to wall it off through the proliferation of fixed tissue cells is well under way before allergy can be detected. This attempt is so successful as to bring the tubercle bacilli under control quickly and to hold them under control in a high percentage of cases. It is difficult to see how immunity is of great importance, since the protective mechanism was at work before there was time for immunity to develop. Nor can this control of the bacilli be explained on the basis of racial immunity, since Indian, Negro and Mexican children meet the first infection with tubercle bacilli with the same defensive mechanism and control it equally well. When tubercle bacilli subsequently reach the tissues, whether from exogenous or endogenous sources, a specific reaction takes place. Many of the bacilli are fixed at the site of lodgment and, because of allergy, necrosis and cavitation frequently occur, as well as fibrosis.

Careful observations have revealed that in many large cities there is not an overwhelming percentage of the population

infected with tubercle bacilli. Tuberculin tests administered to children and young adults in many cities have been a revelation to physicians, for they have shown that relatively low percentages have been contaminated. To be sure, in some sections of large cities, such as Philadelphia, one may find communities where very little has been done to protect against exposure to tubercle bacilli and where 80 per cent or more of the young adults react positively to the test. In the same cities, however, one finds other sections where considerable attention has been paid to communicable diseases, including tuberculosis, and where a relatively small percentage of the young adults react positively to the test. Evidently the reduced mortality from tuberculosis has gone hand in hand with the reduced incidence of positive reactors.

The initial dose of tuberculin has been carefully studied. Most of the workers who have used 0.1 mg. of old tuberculin as the initial dose are of the opinion that it does no harm. However, some believe that 0.01 mg. should be used as the first dose. It is true that the characteristics of a positive tuberculin reaction are an area of edema at and around the site of the injection, with an area of hyperemia surrounding the edema. Without such a reaction the test is not positive. There is no reason to judge that because of this local reaction a reactivation of the tuberculous focus will occur. The chief trouble seems to be that many physicians are confusing the intracutaneous test with a very small dose of tuberculin with the old subcutaneous test, in which a large dose of tuberculin was administered and in which the positiveness of the reaction was determined largely by constitutional symptoms and even demonstrable reaction round the tuberculous focus, as manifested by the appearance of or increase in râles or collateral inflammation demonstrated by the x-ray film. The pediatrician or physician in any other phase of medicine who has done only the occasional tuberculin test or none at all might take issue with the statement that the test causes no harm, but those who have performed thousands of tests will not take issue. The new pure protein derivative will probably replace old tuberculin and a standard dose and technic will be recommended.

The statement that the positive tuberculin test in an adult who shows no lesion on roentgen examination is of no significance and "indicates only that at some period of life tubercle existed in the individual" does not suffice. In the finding of the first infection focus of tuberculosis, which practically always results in a positive tuberculin reaction, the x-ray film is of little avail. By it, 75 per cent or more of the lesions are missed, as demonstrated by Miller (*Am. J. Roentgenol.* **26**:191 [Aug.] 1931) and others who have carefully studied x-ray films made ante mortem and compared the observations with what has been found post mortem. In reality, the positive test at any age in life indicates tubercle formation with living tubercle bacilli present; otherwise the test would not remain positive. To state to a patient that a positive reaction "indicates only that at some period of life tubercle existed in the individual" is very misleading. One should always add that tubercle still exists. The recent pathologic observations of Robertson (*Am. J. Path.* **9**:711 [supplement] 1933) are convincing, particularly his concluding statement that "one can almost say 'Once infected, always infected.'"

To argue for tuberculinization of the entire population and to bring this about would in all probability set the clock of tuberculosis back a century. When it probably was true that nearly every one had been infected with tubercle bacilli, the mortality rate from tuberculosis in this country was extremely high; for example, a century ago approximately 450 persons from each hundred thousand of population lost their lives from tuberculosis every year, whereas at present when the incidence of positive reactors among persons of high school and even university age has dwindled to 25 or 30 per cent the mortality has decreased to an almost unbelievable figure; in fact, less than 50 persons among each hundred thousand of population lose their lives from tuberculosis each year in many parts of this country. It is difficult to see "a more rational and reasonable middle path," since it is true that positive tuberculin reactors provide practically all the cases of clinical tuberculosis.

EFFECTIVE TREATMENT FOR BEE STINGS

To the Editor:—Is there any effective treatment for bee stings, other than local applications, which may aid in combating the more severe reactions that sometimes occur?

P. N. L., Chicago.

ANSWER.—In the June 1934 issue of *Bees and Honey*, page 117, the use of epinephrine intramuscularly or intravenously in a dosage of 1 cc. of 1:1,000 solution is recommended for the treatment of bee stings. It has been recognized for some time that there is a local and sometimes a general allergic reaction following bee stings, which may be due to pollens, formic acid or some atopic substance inoculated at the time of the sting. The general reaction is typically allergic, consisting of labored breathing, urticaria, edema, or any of the characteristic symptoms. As might be expected, epinephrine is said to provide the same relief in this sort of reaction as it does in reactions to other foreign proteins. While epinephrine is preferable for the relief of acute symptoms, for prolonged relief the oral administration of ephedrine suggests itself in a dosage of from 0.025 to 0.1 Gm. (one-half to 2 grains). This treatment may afford considerable relief if instituted as soon as any unusual or untoward symptoms appear following the stinging. Probably the treatment is equally applicable to stings or bites of a number of other insects as well.

EFFICACY OF RABIES VACCINE

To the Editor:—Please state in what percentage of cases prevention of rabies is obtained by the administration of the Semple rabies vaccine in human beings and animals that have been bitten by a rabid dog.

M.D.

ANSWER.—There is, of course, no way of determining how many deaths from rabies would have occurred without prophylaxis, but the efficacy of the Semple vaccine (phenol killed) as compared with others is indicated by the following tabulation of the latest figures available relating to mortality according to the method of treatment among Europeans given prophylaxis against rabies:

Method	Number Treated	Deaths	Mortality, per Cent
1. Dried or glycerinated cords	25,600	47	0.18
2. Modified dilution methods	19,033	20	0.11
3. Killed phenol vaccines	19,196	22	0.11
4. Heated vaccines	27,967	32	0.11
5. Ether killed	31,034	32	0.10
6. Mixed treatments	28,659	36	0.13

When due consideration is given to various factors, such as position and severity of the bite and intervention of the clothing, there is no evidence beyond probable error to indicate superiority of any one of these methods of treatment (*Quart. Bull. Health Organization of the League of Nations* **2**:553 [Dec.] 1933). No figures are available as to animals bitten and subsequently given prophylactic treatment.

PROTEIN IN DIET IN HYPERTENSION

To the Editor:—Each day I see patients who have hypertension, particularly of the arteriosclerotic group. The question of diet always arises. If the function of the kidneys is not impaired as measured by the concentration test and the blood nitrogen, and if there is no edema I do not restrict the patient's protein or salt. Patients tell me that other physicians have kept them on a very strict diet and they hesitate to follow out my instructions. In fact, some of these patients have a secondary anemia from the restricted protein intake. Many patients are convinced that red meats (not white meat or fish) and salt are harmful to patients with high blood pressure. As a young internist I have been criticized for allowing my patients to have meat, eggs, fish and cheese under the conditions outlined. Medical teaching at my alma mater, Washington University Medical School in St. Louis, and recent literature have emphasized the necessity of at least two-thirds to one gram of protein per kilogram of body weight daily. Even in cases of nephritis with albuminuria one gives a higher protein diet if the serum albumin is diminshed. I am in charge of the diabetic clinic and diabetic service at the University of Tennessee Medical School and also teach dietetics to the senior medical students. Therefore I would appreciate a letter from you stating the present medical opinion regarding protein and salt in the diet of hypertension that I can read to the students. Please make a definite statement for the benefit of others regarding any difference between "red and white meats."

JACOB ALPERIN, M.D., Memphis, Tenn.

ANSWER.—The present consensus regarding dietary protein in hypertensive arterial disease is exactly along the lines indicated in the query. Extravagant claims have been made for the value of rigid protein restriction but equally convincing data are presented with liberal protein feeding. If the body does not obtain from two thirds to one gram of protein per kilogram of body weight daily the tissues are broken down to give this protein yield; the protein catabolism is not significantly depressed by protein starvation. Mosenthal has emphasized that restriction of carbohydrates and fats, particularly in obese hypertensive patients, is far more important than protein restriction. Liberal protein feeding does not appreciably alter the arterial tension. Long continued radical restriction of protein may do great harm by the depletion of the tissue reserves, exacerbation of anemia (common in arterial hypertension) and diminution of the resistance to infection. The recent work of Castle has reemphasized the necessity for adequate protein intake to prevent anemia. Although radical dietary restrictions are sometimes warranted for a short period, it must be constantly reiterated that unbalanced diets should not be per-

sisted in over a long period. In the management of hypertensive disease the dietary advice must be such that it can be safely followed over many months and perhaps years. This problem, then, is entirely different from the dietary management of an acute and transient illness.

In the presence of edema, and particularly when a profuse proteinuria occurs, liberal protein feeding to aid in replacing the depleted serum proteins is desirable. The early work of Epstein in this field has been repeatedly confirmed. The rôle of salt (NaCl) as an etiologic factor in hypertensive disease is as yet uncertain. There are some emphatic advocates of extreme salt restriction, but even more convincing contrary data have been presented indicating that moderate amounts of sodium chloride have no detectable influence on the course of arterial hypertension.

It is essentially immaterial whether the source of protein is meat, eggs, milk or cheese. There is no appreciable difference between the metabolic effects of "red and white meats."

The question is discussed in the following articles:

Mosenthal, H. O.: The Treatment of Essential Hypertension, THE JOURNAL, Sept. 8, 1928, p. 698.

Strouse, Solomon, and Kelman, S. R.: Protein Feeding and High Blood Pressure, *Arch. Int. Med.* **31:** 151 (Feb.) 1923.

Mosenthal, H. O.: Influence of Protein Food on Increased Blood Pressure, *Am. J. M. Sc.* **160:** 808 (Dec.) 1920.

Lieb, C. W.: The Effects of an Exclusive, Long Continued Meat Diet, THE JOURNAL, July 3, 1926, p. 25.

Thomas, W. A.: Health of a Carnivorous Race, THE JOURNAL, May 14, 1927, p. 1559.

Dominguez, R.: Experimental Atherosclerosis and Blood Pressure in Rabbit, *J. Exper. Med.* **46:** 463 (Sept.) 1927.

Anderson, Hilding: Experimental Renal Insufficinecy, *Arch. Int. Med.* **37:** 297 (March) 1926.

Jackson, Henry Jr., and Riggs, Margaret D.: The Effects of High Protein Diets on the Kidneys of Rats, *J. Biol. Chem.* **67:** 101 (Jan.) 1926.

Du Bois, E. F.: Control of Protein in Diet, *J. Am. Dietet. A.* **4:** 53 (Sept.) 1928.

Stieglitz, E. J.: Arterial Hypertension, New York, Paul B. Hoeber, Inc., 1930.

Allen, F. M., and Sherrill, J. W.: Treatment of Arterial Hypertension, *J. Metabolic Research* **2:** 429 (Oct.) 1922.

Allen, F. M.: Comments on Some Recent Publications on Hypertension, *Boston M. & S. J.* **189:** 810 (Nov. 22) 1923.

Fontaine, B. W.: High Blood Pressure, *South. M. J.* **15:** 987 (Dec.) 1922.

McLester, J. S.: *Proc. Am. Soc. Clin. Investigation*, 1921, p. 6.

McLester, J. S.: Treatment of Chronic Nephritis Without Edema, THE JOURNAL, July 9, 1921, p. 88.

O'Hare, J. P.: Vascular Hypertension, *Rhode Island M. J.* **3:** 103 (June) 1920.

Christian, H. A.: Relation That Exists Between Hypertension, Myocarditis and Nephritis, *Wisconsin M. J.* **20:** 455 (Feb.) 1922.

Strouse, Solomon: Dietetic Therapeutics, *M. Clin. North America* **5:** 229 (July) 1921.

Mosenthal, H. O., and Short, J. J.: Spontaneous Variability of Blood Pressure and Effects of Diet on High Blood Pressure, *Am. J. M. Sc.* **165:** 531 (April) 1923.

Mosenthal, H. O.: Treatment of High Blood Pressure, *M. Clin. North America* **5:** 1139 (Jan.) 1922.

Wiseman, J. R.: Hereditary Hypertension and Arteriosclerosis, THE JOURNAL, Feb. 11, 1922, p. 409.

HYDROCHLORIC ACID IN HAY FEVER

To the Editor:—I have read an article on the use of nitrohydrochloric acid in the treatment of hay fever. It says in this article that the relief obtained from the acid treatment is to be compared favorably with the pollen desensitization method. What is your opinion? I should like to know what dangers and contraindications this might give if used in the following prescription:

℞ Nitrohydrochloric acid..... 4½ fluidrachms
Distilled water, q. s.....ad 4 fluidounces

Sig. One teaspoonful in two-thirds glass of water followed by glass of water four times a day.

Please omit name.

M.D., Massachusetts.

ANSWER.—This prescription is similar to that advocated by Beckman (*J. Allergy* **1:**496 [Sept.] 1930; Treatment in General Practice, Philadelphia, W. B. Saunders Company, 1934) for the treatment of hay fever; it is not dangerous. Beckman reported 67 per cent of complete or marked relief in 237 hay fever cases by the oral administration of nitrohydrochloric acid; this figure was about equal to that obtained by leading allergists with the usual desensitization method of injections of specific pollen extracts. Many other workers have argued this point both before and after Beckman's article and the consensus, especially among the leading allergists, is about as follows:

1. No one has proved that hay fever or other allergic disease is due to a lack of acid (i. e., an alkalosis), even though there is evidence that many allergic individuals do have less hydrochloric acid in the stomach contents than normal persons.

2. Although the method has been tried by many allergists, in general it has not been successful in alleviating the symptoms of hay fever. One commonly overlooked point is that hay fever symptoms are directly proportional to the pollen count. On days when there is little or no pollen in the air, any method of treatment is excellent and is apt to be called "curative"; but when the pollen count is high, symptoms will be greater—that is the time to evaluate the method of treatment.

The intravenous injection of dilute hydrochloric acid recently advocated in allergic conditions is not without danger; its usefulness in these disorders is quite questionable.

TREATMENT OF SYPHILIS

To the Editor:—A man, aged 38, first came to me in August 1933 complaining of a discharging mass on the lower right mandible. Roentgen examination gave negative results. The Wassermann reaction was 4 plus. The spinal fluid Wassermann reaction also was negative. I started off by giving him ten injections of iodobismitol biweekly, at the end of which time the lesion on the mandible had entirely cleared up. I continued to give him one injection of iodobismitol and one of neoarsphenamine weekly for six weeks and the one injection of neoarsphenamine weekly for four more weeks. This brought me to the end of the year 1933 and the Wassermann reaction was 4 plus at this time. I continued to give one injection of neoarsphenamine and one of iodobismitol weekly but at the end of two weeks the urine showed a very faint trace of albumin, from 10 to 20 red blood corpuscles per high power field, an occasional white blood corpuscle and occasional hyaline and granular casts. I stopped the neoarsphenamine injections but continued the iodobismitol for four more weeks. The urine cleared up by the end of this period and I continued to give one neoarsphenamine and one bismuth injection weekly for six weeks. But at the end of two weeks the urine was as before and I stopped the neoarsphenamine, giving only iodobismitol twice a week up to the present. The Wassermann reaction is still 4 plus. Only once, at the end of the first ten weekly bismuth injections, was the Wassermann reaction 3 plus. Clinically he shows no signs and gives no symptoms. His general condition is good. His weight has increased about 10 pounds (4.5 Kg.) since I first saw him. The total amount of neoarsphenamine that the patient has received thus far is 10 Gm., covering seventeen injections, and twenty-eight injections of iodobismitol, all within a period of seven months. His longest rest period was five weeks. On and off during this continuous treatment he received iodides by mouth. Is this treatment too concentrated? Is another lumbar puncture indicated? Shall I continue with these drugs or can you suggest any others? Can I consider this a case of Wassermann-fast syphilis? Only since the last six weeks have I allowed him to have protected coitus with his wife (his wife's and daughter's Wassermann reactions are negative). Is this safe? Do you consider the urine picture bad enough to discontinue neoarsphenamine? Please omit name.

M.D., New York.

ANSWER.—The treatment given this patient is not too concentrated for the average individual in early middle age with late syphilis. For this particular patient the signs of kidney irritation suggest that in this instance it may be too much. Renal irritation is definitely more frequent when the arsphenamines and heavy metals are given simultaneously than when they are given in alternate courses. Bismuth is somewhat more likely to produce renal irritation than neoarsphenamine. With the urinary condition found here it would be wise to discontinue all treatment for a time in order to observe the effect of a prolonged rest period on the kidneys. At the same time it would be desirable to have information as to the patient's blood pressure, the presence or absence of edema, the state of the eyegrounds and the results of such tests for renal function as the phenolsulphonphthalein excretion, the ability of the urine to concentrate solids (Mosenthal test), and the degree of nitrogen retention in the blood, if any. If there are no alterations of renal function and no constitutional symptoms of nephritis or nephrosis, and if the urinary abnormalities clear up promptly as soon as treatment is stopped, it may be assumed that these abnormalities are due to renal irritation from antisyphilitic drugs. It would be desirable to allow a rest period of at least a month after the urinary changes have disappeared and to start treatment then with neoarsphenamine alone in small dosage, from 0.2 to 0.3 Gm., increasing by small increments of 0.1 Gm. each, with frequent examinations of the urine. If renal irritation does not appear again with a dosage of 0.6 Gm. of neoarsphenamine, it will be safe to continue with this level. After eight or ten injections of neoarsphenamine, this drug should be discontinued and a bismuth compound started, with the same careful control of the urine. In a patient with previously undamaged kidneys, it is unlikely that either neoarsphenamine or a bismuth compound in the dosage employed will produce any serious or permanent kidney injury, and it is probable that continued treatment with alternate courses of neoarsphenamine and a bismuth compound can be carried out without further difficulty.

Since the patient's blood Wassermann reaction has been persistently positive for eight months, it is reasonable to assume that he is Wassermann fast. Under these circumstances his treatment should be continued for an arbitrary minimum of two years if possible, during which he receives the equivalent of six or eight courses each of an arsphenamine and a heavy metal, without reference to the response of the blood Wassermann reaction. It is not necessary to do another lumbar puncture.

If the indication given in the query that the patient has late syphilis is correct, if he has been married for some years and if his wife is not already infected, there is no reason why unrestricted sexual intercourse with or without protection should not be permitted. The chief danger of infection under such circumstances is seminal, and the possibility of this has been either abolished or largely minimized by the treatment already given.

ARCUS SENILIS IN COLORED RACE

To the Editor:—A Negro, aged 59, presents a marginal opacity of the cornea about 1 mm. in width (arcus senilis). While the condition is ordinarily attributed to senile degeneration of the corneal tissue, the history of exposure of the face to intense heat covering a period of about fifteen years brings up the question of causal relationship. Is it possible that heat may be considered an etiologic factor or is it true that arcus senilis appears at an earlier age in the Negro? Please omit name.

M.D., Wisconsin.

ANSWER.—Although there have been no publications dealing with this question, it is perfectly true that arcus senilis appears frequently at an earlier age in the colored than in the white race. This statement is made on personal observation and on verbal communications from several ophthalmologists who have had the opportunity of seeing large numbers of colored patients. The investigations of Versé and Rohrschneider, Vogt, Guido Meyer and others have shown that an arcus senilis is the result of lipoid infiltration of the periphery of the cornea, that it begins histologically before a clinical diagnosis is possible, and that it may appear in arcuate or complete ring form. If the former, the regions of the upper and the lower limbus are more apt to be involved than the lateral regions. Thus the involved areas are those covered by the lids and consequently protected against extremes of heat and cold. The etiologic factors are entirely unknown but it is fairly certain that heat has no part. A rather complete discussion may be found in the Kurzes Handbuch der Ophthalmologie by Schieck-Brückner, volume 4, page 375.

DERMATITIS IN SILK INDUSTRY

To the Editor:—A patient of mine operates a ladies' underwear factory in which "weighted silk" is used. He thinks that the silk is weighted with either tin or lead. He has noticed that some of his employees have developed a fine papular itching rash of the hands, especially the tips of the fingers. The silks are dyed, but the dyers state that no such skin irritations have occurred among their own employees. Can you suggest the possible cause of this rash or possibly let me know whether you have had any similar communications from like industries?

JACOB KINCOV, M.D., Easton, Pa.

ANSWER.—From time to time items are published attributing a dermatitis among silk workers to various causes. Among possible causes are tin tetrachloride, formic acid, dyes, sodium silicate, barium salts, dextrin, glues, linseed oil, Japan wax, sodium toluene-parasulphonchloroamide, vegetable mucilages, liquid petrolatum and rubber solutions. These substances, together with others, many of which constitute secret formulas, may be used in the weighing, finishing, plumping, sizing, lustering, delustering and dyeing of silks, natural or artificial. Little warrant exists for the picking out from this list of any one or two substances and placing on them greater blame as the source of the dermatitis. However, when tin tetrachloride or formic acid is used, some suspicion is possibly justified. Rarely an individual case may be traced to the dye, sensitization having taken place. Whatever hazards exist are greater for the silk worker than for the silk wearer, since the first laundering often sadly changes the appearance of silken garments, which apparently are sometimes chemically dressed up for sales appeal. While the creation of systemic lead poisoning by lead originating in the wearing of lead weighted garments remains unproved, injury to the skin from various agents placed on the silk or artificial silk fiber may be more of a reality, especially among silk garment makers daily handling unlaundered washable articles.

FISSURES OF LIPS

To the Editor:—What is the best treatment for a persistent fissure on the lower lip of the mouth? This fissure occurs each winter. The patient is a young married woman, apparently in the best of health.

C. E. JOHNSON, M.D., St. Paul.

ANSWER.—Fissures usually occur in skin that has lost its elasticity and extensibility through infiltration and thickening. They are found frequently about the mucocutaneous orifices, especially in eczema, syphilis, intertrigo and keratoderma. In persons using false teeth they are common at the outer angles of the mouth.

When they are associated with a seborrheic dermatitis, a sulphur ointment with a resorcinol lotion has been reported as helpful.

When it is closely allied to chapped lips, a red pomade consisting of tannic acid, 0.2 Gm., and cerate of red spermaceti, 10 Gm., to be used as a lip pomade, has been highly recommended. This is not visible and renders the lips more resistant to irritation.

Sulphonated bitumen, 2 per cent in hydrous wool fat, has been found helpful. Inunction with pure white hydrous wool fat may be sufficient.

It is important to avoid irritating washes, soap and water, tobacco and moistening the lips with saliva.

Fissures of the lip are sometimes rebellious and excision may be necessary with removal of a wedge shaped area including the infiltrated portion of the lip followed by accurate suture. No deformity should result.

Under expert hands, roentgen irradiations and diathermy might also be considered; but ordinarily skilful excision would be preferable.

REACTION TO IMMUNOGENS

To the Editor:—A little girl, 7 years of age, presenting a chronic low grade infection of the accessory sinuses (as evidenced by general haziness of antrums and anterior ethmoids in roentgenograms, postnasal and prenasal drainage, and coughing when in the recumbent position), was given what might be considered subreaction doses of catarrhal immunogen (Parke-Davis) on biweekly visits. The doses given were 2, 3, 4, 6 and 8 minims (0.12, 0.18, 0.24, 0.36 and 0.5 cc.), five doses in all. No complaints were registered until the fourth dose was administered, when there followed slight general malaise for about thirty-six hours with moderate local reaction; no elevation of temperature was detected. Following the last dose, some general malaise and impairment of appetite were noted. This continued and on the fourth day following the last injection the temperature rose to 102 F. There followed several loose bowel movements and some vomiting with the onset of this fever. These symptoms rapidly disappeared and did not return. The elevation of temperature continued for eight days, ranging from 100 to 103.5. Some shifting headaches were complained of and some slight stuffiness of the right side of the nose. The child seemed bright during the entire illness, without stupor, prostration, neurologic signs, cough or nasal discharge; in fact, the physical examination was entirely negative except for slight general redness of the pharynx and tonsils noted when the temperature was high. No swelling of these organs at any time and no palpable glands were noted. Repeated urine specimens were negative. The blood count on the fourth day of fever revealed 3,650 white cells, 26 per cent lymphocytes, 11 per cent large mononuclears, 1 per cent basophils, 3 per cent myelocytes and 59 per cent polymorphonuclears. On the sixth day of fever the white count was 6,450 cells, with approximately the same differential count. Blood culture proved negative. The temperature fell by lysis on or about the ninth day. The absence of symptoms other than fever in this case prompted me to a consideration of the possibility of the accumulation of toxins from these injections. Could there be a slow constant liberation of neutralized toxins from a preparation of this sort? What local reactions the child had at the site of the injections disappeared rapidly. The symptoms for which the child was treated with the immunogen cleared up quickly and were entirely gone before the onset of the fever. A single injection of 4 minims (0.24 cc.) of this preparation was given three months previously, but a reaction occurred of fever, nausea, vomiting and a severe sneezing fit, with a severe local reaction, and the parents preferred to forego further inoculation until the reported series was attempted. The late appearance of the fever and its continuation for nine days made this case of unusual interest. There is no allergy in the family background. Please omit name.

M.D., California.

ANSWER.—Immunogen (Parke, Davis & Co.) may be a mixture of antigenic substances. It is not on the accepted list of New and Nonofficial Remedies. Its use as a remedy rests on empirical grounds supported by advertising propaganda. Whether it caused, directly or indirectly, any or all of the symptoms described in the 7 year old girl cannot possibly be determined.

RESIDENCE FOR PATIENT WITH PANSINUSITIS

To the Editor:—What region do you consider the most favorable as a residence for one afflicted with chronic pansinusitis?

N. J. WEILL, M.D., Pittsburgh.

ANSWER.—Places that have sudden and marked variations in temperature or a great deal of cold damp weather are usually considered unfavorable for sufferers from sinus infection. The ideal spot would be one where the temperatures vary but little and where it is quite warm and reasonably dry. Southern Arizona in the region of Tucson or Phoenix is good for these patients, especially during the winter. It must be said, however, that there is a rather sudden drop in temperature in the evenings, and in the summer the heat may be intense. For people who enjoy and thrive on hot weather, southern Arizona has proved favorable. The region of San Diego in southern California is good, for the temperature is warm, mild and equable. San Antonio, Texas, is also favorably located but is of course hot in summer. Sinus infections may occur anywhere, especially where sudden changes in the weather occur.

A person who lives in one of the regions mentioned is less likely to have frequent or severe exacerbations of the trouble. With this diminution in the frequency of the attacks, together with the beneficial effect of warm, balmy air, the mucous membranes of the nose and of the sinuses have a better chance to recuperate and to resist the infection. Besides the favorable climate, proper drainage of the sinuses should be instituted in chronic cases.

FUNCTION OF EPIGLOTTIS

To the Editor:—A question has arisen in my speech courses as to the function of the epiglottis. Will you please state what is conceded to be the function of this structure in deglutition? I would appreciate your giving me some references on this subject. Please omit name.

M.D., Brooklyn.

ANSWER.—The precise rôle of the epiglottis in deglutition is still somewhat obscure. It is generally held that the epiglottis, by being pulled or pushed down and backward in the act of swallowing, forms a lid on the glottis. But the glottis is closed by other mechanisms. This probably explains the fact that the swallowing of foods or liquids, without any of them entering the larynx, can go on in the absence of the epiglottis. On the other hand, observers have described actual back folding of the epiglottis in the swallowing act. The thyro-epiglottic and the aryepiglottic muscles will tend to place the epiglottis in this position, if they contract during swallowing. The pulling backward of the base of the tongue (due mainly to contractions of the hypoglossal and genioglossal muscles) also tends to press the epiglottis back so that its free tip extends beyond the glottis, which, by another series of muscles, has not only been closed but also pulled up and forward so as to be partly covered by part of the tongue. Textbooks on anatomy that may be consulted are those by Gray and by Cunningham and, on physiology by Howell, by Starling and by Tigerstedt.

ARSENIC AND OPTIC INFLAMMATION

To the Editor:—I have a patient who is getting intensive neoarsphenamine treatment for syphilis. He receives 0.9 Gm. every week. In addition, he gives himself inunctions of mercury. The treatment was started in the primary stage and has been going on now for eighteen months. He had a relapse six months ago, with a return of the secondary skin eruption. Ever since the inception of treatment he has had an injected conjunctiva in both eyes. There is no lacrimation, purulent discharge or photophobia. His eyesight is as good as ever, and he has no ocular pain. Does this symptom mean that he is getting too much arsenic? And if treatment is kept up, would it affect his eyes in any way? Please omit name.

M.D., Michigan.

ANSWER.—It is possible that the injection of the conjunctiva is due to the long continued use of arsenic. Such cases have been reported (Simon, Krauss, Kleeburg, all cited in the Kurzes Handbuch der Ophthalmologie **7**:173). An idiosyncrasy is undoubtedly present in such cases and the conjunctival hyperemia is merely a local manifestation of what elsewhere would be a skin exanthem. However, it is equally possible that the patient is suffering from a chronic conjunctivitis of other source. The indefinite use of arsenic has caused not infrequently an optic neuritis.

ARTIFICIAL INSEMINATION

To the Editor:—I was much interested in the answer to the question on artificial insemination in Queries and Minor Notes (THE JOURNAL, August 11, p. 432). As I was probably the first to make these experiments on a large scale, having performed more than 100 attempts, I would like to add a few additional comments to the answer given, with which I in the main agree. In the first place, one should in every case first examine the female after coitus (Huhner test) to see whether the spermatozoa during normal coitus do or do not reach the uterine cervix and remain alive there. It is therefore obvious that artificial impregnation is not at all indicated if it is found that the spermatozoa get there by themselves during coitus. The second point which I deem important and which is the only objection I find in the answer, is the amount of semen that is injected into the uterine cavity. There is no objection to injecting any amount of semen, provided it is injected only into the cervix and about the cervical os, but I consider it dangerous to inject 1 or 2 cc. into the uterine cavity itself. No matter how gently or slowly this quantity is injected, there is the danger of some of it being forced into the tubes and infection is possible. It must be appreciated that there is no known practical method to sterilize semen surgically without killing the spermatozoa. I have often advanced the theory that during normal intercourse there is some property in the genital secretions which allows the spermatozoa to pass into the uterine cavity and upward but holds back or kills the ordinary bacteria that may accompany the semen. When it is considered that during ordinary marital life intercourse is performed without any antiseptic or aseptic precautions without infection following, one must believe in the aforementioned provisions of nature. As another practical point, it is advisable to apply the tenaculum to the lower cervical lip so that, if any bleeding occurs either in the putting on or taking off, it will not run over the cervical os and contaminate the semen.

MAX HUHNER, M.D., New York.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates).* The examination will be held in various centers throughout the country, Oct. 1. *Oral (Group A and Group B candidates),* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: San Antonio, Texas, Nov. 13; Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, Oct. 2-3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

ARKANSAS: *Basic Science.* Little Rock, Nov. 5. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 2. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 13. *Prerequisite to license examination.* Address, State Board of Healing Arts, 1895 Yale Station, New Haven.

GEORGIA: Atlanta, Oct. 9-10. Joint Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 2. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 16-18. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Oct. 8-10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: Lansing, Oct. 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 2-3. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 2. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science.* Lincoln, Oct. 2-3. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. P. G. Cornish Jr., 221 W. Central Ave., Albuquerque.

NEW YORK: Albany, Buffalo, Syracuse and New York, Sept. 24-27. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

RHODE ISLAND: Providence, Oct. 4-5. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, Oct. 1-2. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WYOMING: Cheyenne, Oct. 1. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

Minnesota June Examination

Dr. E. J. Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, June 19-21, 1934. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Thirty-three candidates were examined, all of whom passed. One physician was licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

PASSED			
School		Year Grad.	Per Cent
Northwestern University Medical School		(1934)	89.1
Rush Medical College		(1934)	85.5
University of Minnesota Medical School	(1932) 91.5,* (1933) 85.4, 88,* 88.2, 90.1, 90.6,* 92.6,* 93, (1934) 83.3,* 85,* 86.2, 86.4,* 87.4, 88.2, 88.6, 89.6,* 90,* 90,* 90.1,* 90.1,* 90.1,* 90.2, 90.3,* 90.6,* 93.2*	(1931)	89.5,
University of Nebraska College of Medicine	(1932) 90.1,	(1933)	85.5
Syracuse University College of Medicine		(1929)	89.6
University of Pennsylvania School of Medicine		(1933)	93.5
Marquette University School of Medicine		(1934)	89.6

LICENSED BY RECIPROCITY		
School	Year Grad.	Reciprocity with
Rush Medical College	(1930)	Illinois

LICENSED BY ENDORSEMENT		
School	Year Grad.	Endorsement of
University of Minnesota Medical School	(1933), (1934)	N. B. M. Ex.

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

Oklahoma June Examination

Dr. J. M. Byrum, secretary, Board of Medical Examiners, reports the written examination held in Oklahoma City, June 6-7, 1934. Sixty-five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.
Northwestern University Medical School		(1934, 2)*
Washington University School of Medicine	(1930, 2),	(1932)
University of Nebraska College of Medicine		(1930)
University of Oklahoma School of Medicine		(1934, 58)†
University of Pennsylvania School of Medicine		(1933)

* One of these applicants has received an M.B. degree and will receive an M.D. degree on completion of internship.

† Licenses withheld pending completion of internship.

Book Notices

Recent Advances in Sex and Reproductive Physiology. By J. M. Robson, M.D., B.Sc., F.R.S.E., Beit Memorial Research Fellow, Institute of Animal Genetics. With foreword by Professor F. A. E. Crew, M.D., D.Sc., F.R.S.E., Director of the Institute of Animal Genetics, Edinburgh. Cloth. Price, $4. Pp. 249, with 47 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1934.

This addition to the Recent Advances Series will be welcomed by many who want a brief discussion of some of the newer contributions to the physiology of the reproductive organs. Although the title does not indicate the limitation, this work is practically confined to a consideration of effects in the female. In this it cannot be said to attain completeness, which is not surprising in view of its brevity, and it may not be compared with such monumental volumes as Sex and Internal Secretions, edited by Edgar Allen. Such is the celerity of development in the field covered, indeed, that many of the discussions in the book are already out of date. Nevertheless, for a basic knowledge of the subject, Dr. Robson's summary may be recommended to those who cannot or will not wade through weightier tomes.

In general the author has maintained an admirable attitude of skepticism and conservatism and, unlike many recent authors in endocrinology, he has analyzed the subject matter critically. Even in the section on therapeutic applications he points out the necessity for an adequate understanding of the hormone disturbances underlying a given clinical syndrome before endocrine therapy is attempted, although the methods of arriving at such an understanding, such as the tests advocated chiefly by Frank, are not properly emphasized. One serious criticism that may be made (and this applies equally to many other recent books) is that the nomenclature employed has not been edited with a view to preventing confusion. The multiplicity of active principles, the alleged identity of factors from various sources and the interests of commercial firms have led to the coining of a tremendous number of names. Many of these are synonymous or seem to be; others apply to two different principles once thought identical and more recently demonstrated otherwise or to two or more factors thought to be identical but not proved so. Thus has confusion been compounded. Unfortunately, authors of modern textbooks pay little heed to the necessity for rigid adherence to a nomenclature that provides not only for past contributions but for future developments as well. In this, writers might consider the report of the Council on Pharmacy and Chemistry on Estrogenic Substances (THE JOURNAL, April 29, 1933, p. 1331), which demonstrates how adequate terminology may be applied in this fashion.

Allgemeine Konstitutionslehre in naturwissenschaftlicher und medizinischer Betrachtung. Von O. Naegeli, Dr. med., Dr. Jur. H. C., Dr. der Naturwissenschaften H. C. Second edition. Paper. Price, 15 marks. Pp. 190, with 32 illustrations. Berlin: Julius Springer, 1934.

The problems of constitution in its relation to medical problems have expanded greatly since the first edition of this monograph appeared. It was the original purpose of the author to correlate information touching on problems of biology and medicine, and the book was enthusiastically received by the profession. The style and purpose of the first edition have been maintained in this revision. The only change has been in bringing the material down to the present. It is concise and practical, and the reader is not confused by a mass of conflicting data. Because of the author's background in biology and clinical medicine he is able to present this subject to the physician in an authoritative manner. Some readers, especially those primarily interested in biology, may deplore the paucity of bibliographic references or discussion of the work of other investigators in the field. This, however, has undoubtedly been a purposeful omission to conform with simplicity in presentation. The monograph is carefully organized. In the first part the reader is given a comprehensive historical outline of constitution and disease. In the next part the author discusses some of the fundamental facts on variation, mutation, and modification of the species. The last part of the book is devoted to clinical application of these facts in the study of human disease and anomalies. Almost every phase of medicine has been touched on. Mutation problems in malignant tumors, mutation and its significance in bacteriology, constitutional factors in the various types of blood dyscrasias, and psychoneuroses from the standpoint of their constitutional background are concisely treated in a comprehensive manner. Few physicians who read this monograph will fail to be stimulated. It is a work that can be well recommended to both the biologist and the practitioner of medicine, for their interests merge on this important subject.

Midwifery for Nurses. By Henry Russell Andrews, M.D., B.S., F.R.C.P., Consulting Obstetric Physician, London Hospital, and Victor Lack, M.B., B.S., F.R.C.P., Assistant Obstetric and Gynæcological Surgeon, London Hospital. Seventh edition. Cloth. Price, $2.50. Pp. 268, with 70 illustrations. Baltimore: William Wood & Company, 1934.

This well known book has been ably revised by Victor Lack. The chief alterations are in the chapters on antenatal care, infection in labor, aseptic technic, puerperal sepsis and infant feeding. Data have been added concerning maternal mortality, stillbirths and anesthetics. The book is intended for nurses and nurse-midwives, and the subject matter is presented in a masterly way. It is unfortunate that rectal examinations are not even mentioned in the book. Nurses are instructed as to the proper way of making vaginal examinations during labor, but rectal examinations are certainly easier and usually less dangerous than vaginal examinations. In cases in which the cervix is fully dilated and the membranes are intact, the nurse is advised to "rupture the membranes by scratching through them with the finger-tip while they are made tense by a pain." This procedure may not be easy with the gloved finger. Furthermore, the nurse should be cautioned not to rupture the membranes during a pain if the head is high up, because the umbilical cord may prolapse. The authors recommend the use of castor oil on the second day after delivery. Most American obstetricians have given up the use of this laxative except for the induction of labor. In speaking of the treatment of placenta praevia the authors maintain that a nurse ought not to perform a version. Even in the hands of a physician, version in cases of placenta praevia is often a dangerous procedure. The popularity of the book is attested by the fact that it has been translated into three foreign languages, and this popularity will undoubtedly be retained in the British Isles and British dominions.

Atlas of Selected Cases of Pathological Anatomy. By W. M. de Vries, Professor of Pathological Anatomy at the University of Amsterdam. Cloth. Price, 25 Dutch guilders. Pp. 73, with 73 plates. Amsterdam: J. H. De Bussy, Ltd., 1933.

This atlas was dedicated by the author to the University of Amsterdam on the day of its tercentenary. The specimens used for illustration were chosen for various reasons—some because they were wanted for a publication, others because the pathologic condition was rare or characteristic, others again because the author could not find in the literature a good drawing of the condition. Most of the illustrations are in colors, but the artist has avoided using an excess of color, a fault that impairs the value of many atlases. There was no intention of composing a complete atlas of pathology but rather to select specimens for drawing that would have some value for clinicians and pathologists.

The drawings are grouped according to organs involved. Nineteen illustrations exhibit lesions of the heart and blood vessels. In this group are illustrated various forms of endocarditis, syphilitic aortitis, malformations of the heart, canali-

zation of a thrombus, and a most unusual sarcoma of the veins of the leg. There are twelve illustrations of lesions of the lungs. The pictures of "the lung in Spanish influenza" are the only ones in the book that are too highly colored. Especially worthy of mention in this group are the drawings of two aneurysms in a tuberculous cavity, and the "so-called lymphangitis carcinomatosa of the lung and pleura." Fifteen drawings are devoted to lesions of the liver and gallbladder. Of especial interest to surgeons is the picture of "necrosis (anemic infarction) in the right lobe of the liver after ligation of the right branch of the hepatic artery" during a difficult operation on the gallbladder. Eight drawings each illustrate lesions of the kidneys and of the brain and spinal cord. Special mention should also be made of the gross and microscopic illustrations of the spleen in Gaucher's disease, hemorrhagic necrosis of the mucosa of the rectum following the use of an enema that accidentally contained too much alcohol, chorioepithelioma in the male, and three remarkable illustrations of the head and skull in a case of generalized osteitis fibrosa in a chimpanzee.

Most of the illustrations are accompanied by a brief clinical history, a description of the specimen illustrated and the important items in the anatomic diagnosis of the case from which it was obtained. In many instances there are one or more references to pertinent literature. The text is in English. The typography and reproduction of drawings are excellent. This volume can be heartily recommended to clinicians and pathologists as a group of fine illustrations of significant pathologic conditions.

Diagnostic clinique: Examens et symptômes. Par le Dr. A. Martinet. Avec la collaboration des Docteurs Desfosses, Georges Laurens, Léon Meunier, Lutier, Saint-Cène et Terson. Sixth edition. Cloth. Price, 145 francs. Pp. 1138, with 875 illustrations. Paris: Masson & Cie, 1934.

This book has established itself as a classic in the French medical literature. It presents a detailed description of the whole field of medical diagnostic science, written by the best known French authority on this subject. This edition has been completely revised by the collaborators of the deceased author. The work is divided into three parts. The first is devoted to general remarks, description of the evolution and present status of the diagnostic science and discussion of common causes of diagnostic errors, such as ignorance, incomplete examination or errors of judgment. History writing and physical examinations are described in an exhaustive and yet simple manner. The second part deals with the technic of examination of the respiratory, digestive, circulatory, genito-urinary and nervous systems. Special chapters are devoted to descriptions of bacteriologic technic, biologic tests, anthropobiometry, basal metabolism, interferometry, and acid-base equilibrium. The third part deals with symptomatology; separate chapters are devoted to the differential diagnosis of albuminurias, anemias, ascites, convulsions, hematurias, lumbago and jaundice. Newer laboratory and clinical methods, such as gastroscopy, interferometry, roentgenography of the spleen and liver, ventriculography and determination of venous pressure, receive a due consideration. The printing and paper are excellent, the style fluent; the text is amply illustrated by colored plates and numerous charts. The book may be considered a valuable and authoritative contribution to the French medical literature and can be heartily recommended to all general practitioners who read French.

Manuel de radiodiagnostic clinique. Par R. Ledoux-Lebard, chargé de cours de radiologie clinique à la Faculté de médecine de Paris. Fascicules I et II. Cloth. Price, 260 francs. Pp. 1075, with 1143 illustrations. Paris: Masson & Cie, 1933.

Especially to his numerous friends among the radiologists of the United States these two volumes serve as a pleasant reminder of the loyal and generous war-time service rendered by the author to the medical department of the American Expeditionary Forces. A subsequent lecture trip to this country a few years after the war served further to cement the warm friendship accorded him by a host of friends in America. These volumes constitute a notable contribution to radiology and stand easily as the foremost French publication of this sort. In the author's characteristic easy style the text offers no difficulty and much attraction to readers of French. The pages devoted to physics are ample, and it is gratifying to see the generous space devoted to the various methods of localization of foreign bodies, a field in which the author excelled during the great war. It is often disappointing to note a surgeon seeking long and blindly in the glaring light of the operating room, interrupting his work at frequent intervals to study some roentgenograms on the side wall, in attempting to find and remove a foreign body that could be located and delivered in a short time by the aid of the fluoroscope, a training that was given to many American surgeons during the war but little taught and less practiced by the newer generation of physicians taking up surgery. In turning through the pages of these two volumes, chapter by chapter, one is impressed with the thoroughness with which the various subjects are discussed. If some disappointment is felt on account of the small size of the illustrations and the rather less than best reproduction of the roentgenograms, this feeling is pretty well offset by satisfaction in the completeness of the text and its general readability.

Electrokinetic Phenomena and Their Application to Biology and Medicine. By Harold A. Abramson, M.D. American Chemical Society Monograph Series, No. 66. Cloth. Price, $7.50. Pp. 331, with 107 illustrations. New York: Chemical Catalog Company, Inc., 1934.

Many of the reactions characteristic of living cells are probably due to the fact that the molecules in the liquid-liquid and solid-liquid interfaces encountered in such cells are oriented in a specific manner. Because of this molecular orientation, surfaces acquire specific properties that are of fundamental importance in the consideration and interpretation of all types of biologic phenomena. Some ideas concerning the structure of such interfaces may be derived from a study of the differences in electrical potential observed when there is tangential movement of one phase relative to the other. This potential is known as the electrokinetic potential and may be estimated by observing the mobilities of particles in an electrical field, as in electrophoresis, or the motion of the whole body of liquid, as in electro-osmosis. In the first chapter the author discusses the historical development of the subject. Chapters II and IV, on theory, will be found more useful and interesting by chemists and physicists who have had an adequate mathematical training than by the average biologist. In chapter III the author describes various methods available for the study of such electrokinetic phenomena as electrophoresis, electro-osmosis and streaming potentials. The reader interested in the application of these phenomena to medical and biologic problems will find interesting and suggestive material in chapters V, on proteins and related compounds, VIII, on organic surfaces, X, on blood cells, spermatozoa and tissues, and XI, on bacteria, antibodies, viruses and related systems. The average medical reader would probably find this book more useful if it were more descriptive and less mathematical. In its present form it requires special study, which will, however, repay the reader who is interested in the further development of this important field and the application of the results obtained to medical problems.

Le phosphore: Techniques chimiques, physiologie, pathologie, thérapeutique. Par M. Labbé, professeur de clinique médicale à la Faculté de médecine de Paris, et M. Fabrykant, assistant à la clinique médicale de la Pitié. Paper. Price, 55 francs. Pp. 395. Paris: Masson & Cie, 1933.

This work represents, in a well organized form, a compilation of numerous observations on the distribution of different forms of phosphorus in tissues, organs and body fluids under various conditions of health and disease. Although an attempt is made to emphasize the chemical aspects of the methods used, it is quite obvious that this is by no means critical from biochemical or analytic points of view. The data accumulated in some cases are necessarily of doubtful value because of the analytic methods used. Such important forms as phosphoproteins are ignored almost entirely, and nucleotides are stated to be hydrolyzed by phosphatases to phosphoric acid and "hydrocarboné purique ou pyrimidique." The various physiologic and pathologic aspects of phosphorus metabolism are reviewed under the following titles: experimental variations in blood phosphorus; variations in blood phosphorus as a result of the influence of substances influencing carbohydrate metabolism;

excretion of phosphorus; phosphorus in rickets, in hypervitaminosis D, in tetany, in acromegaly, in arthritis, in anemias, in leukemias, in diabetes, in liver diseases, in kidney diseases, in phosphaturia; and the therapeutic use of phosphorus. Here again is evidence of the lack of quantitative evaluation of the rather limited amount of experimental work on the different forms of phosphorus and their distribution. Thus, it is stated as a fact that, no matter what form of phosphate is fed, the phosphate is always absorbed in a relatively simple form and above all as inorganic phosphate. On the whole the compilations on pathologic and physiologic variations in phosphorus metabolism are valuable, but in the present state of knowledge, largely because of lack of adequate quantitative data on different forms of phosphorus, sweeping generalizations should be reserved until a future time. Each chapter is followed by an excellent list of references to original papers.

Homosexualismo creador. Por A. Nin Frias. Paper. Price, 25 pesetas. Pp. 383, with 36 illustrations. Madrid: Javier Morata, 1933.

The author adopts the biologic and social aspects of homosexuality that for some years have been current in German and other publications; he has been greatly influenced by the "Psychopathia Sexualis" of Krafft-Ebbing, Havelock Ellis's "Sexual Inversion," and "Los Estados Intersexuales en la Especia Humana" by Gregario Marañon. He classifies the human race into two types, the so-called normal venereal men and women, with subspecies of urnings (male and female), and the types between these and the venereal class. The condition of homosexuality apparently is considered by the author as beginning in the uterus as a variant of the germ plasm. The author seemingly prefers to consider the pure urning rather as afeminine in feeling and emotions than as a sex aberration or as a sex inversion. It is a distinct biologic state.

The disdain of medieval and modern society for homosexual individuals has been responsible for their shunning sexual life altogether in many instances and sublimating their so-termed abnormal sex life so that they are enabled to devote themselves without abstraction to the higher paths of human culture. They have been of aid to the feminist movement in that they have respected women though not attracted to them sexually, allowing them or helping them to attain sex emancipation. It is in this aspect that the author regards homosexuality as a creative force.

While there is nothing essentially new in reference to the biologic or social aspects of homosexuality, as given by the author, his really valuable contribution to the subject is his study of the literary and other work by this rather extensive sex minority throughout the ages. These he illustrates by citations giving the names of the authors. The bibliography at the end will also be of value to those interested in this subject. The author spent many years traveling in Europe and elsewhere and personally verified all the incidents and works that he cites. Many of these are of the greatest interest.

One point which the author incidentally brings out should be mentioned; namely, that he considers the love between homosexuals to be on a higher plane emotionally and otherwise than that between heterosexuals.

Formes chirurgicales de la tuberculose intestinale. Par L. Bérard, professeur de clinique chirurgicale à la Faculté de médecine de Lyon, et M. Patel, professeur à la Faculté de médecine de Lyon. Paper. Price, 50 francs. Pp. 264, with 69 illustrations. Paris: Masson & Cie, 1933.

Intestinal tuberculosis is so common, particularly among patients suffering from pulmonary tuberculosis, that it is fortunate that Bérard and Patel have presented in this volume the results of their wide experience as well as the experience of many other workers. The book is unusually well prepared. It is concise and at the same time contains all the practical value that is known concerning this subject. The book is divided into ten main divisions, in which are discussed etiology and pathogenesis, general anatomy and pathology, tuberculosis of the small intestine, of the cecum, of the appendix and ileocecal region and of the large intestine, intestinal tuberculosis as a complication with pulmonary tuberculosis, methods of diagnosis, treatment with indications and technic, and complications. Under the heading of diagnosis all phases of the examination are discussed, beginning with the search for tubercle bacilli in the fecal material. Here the authors call attention to views held by different authors: one that the presence of tubercle bacilli in the feces is indicative of intestinal tuberculosis; another that practically all patients with pulmonary tuberculosis have tubercle bacilli in the feces. They emphasize the importance of special technic to recover tubercle bacilli, and guinea-pig inoculation. They assign considerable importance to the finding of blood in the stool, as well as pus. The authors consider the reaction of Triboulet of great value and call attention to recent work with this reaction. Considerable space is given to the roentgen examination and this section is well illustrated. Under treatment they consider all operative procedures: first, those which are palliative and, secondly, those which are radical. Here they deal with the various indications and contraindications for surgery and present several tables showing their results. This section contains good illustrations. Complications, such as fistulas, occlusion and peritonitis through intestinal perforation, are thoroughly discussed as to diagnosis and treatment. The book contains a large bibliography, which includes the studies of several North American authors, such as E. W. Archibald, Lawrason Brown and H. L. Sampson, and D. A. Stewart. The book is to be recommended not only to those particularly interested in intestinal tuberculosis and surgical procedures but also to those with more general interest in tuberculosis.

Röntgenologische Studien über die traumatischen und habituellen Schultergelenkverrenkungen nach Vorn und nach Unten. Von Ivan Hermodsson. Acta radiologica, Supplementum XX. Paper. Price, 9 Swedish crowns. Pp. 171, with illustrations. Stockholm: P. A. Norstedt & Söner, 1934.

This monograph contains the roentgenologic study of traumatic and recurrent dislocation of the shoulder, both forward and inferior or subcoracoid. The author reports ninety-two cases and offers a bibliography. Unfortunately, he has overlooked the work of Heymanowitsch and Nicola.

Cours élémentaire de dessin d'anatomie du squelette. Par A. Moreaux. Paper. Price, 10 francs. Pp. 34, with illustrations. Paris: Masson & Cie, 1934.

This booklet presents the elementary points in sketching the anatomy of the skeleton. It is interesting and simple. It was written for medical students, candidates for professorial degrees and students of the school of fine arts.

Rheumaprobleme. Band III: Gesammelte Vorträge, gehalten auf dem III. Ärztekursus des Rheuma-Forschungs-Instituts am Landesbad der Rheinprovinz in Aachen vom 22. bis 24. März 1934. Von Geheimrat Prof. Dr. Aschoff und anderen. Herausgegeben von Dr. Walter Krebs, Chefarzt des Landesbades und Leiter des Rheuma-Forschungs-Instituts zu Aachen. Boards. Price, 5.40 marks. Pp. 95, with 21 illustrations. Leipzig: Georg Thieme, 1934.

The problem of rheumatic diseases has become such an important one that in many countries, as in the United States, special committees have been formed to organize and correlate researches and to foster conferences presenting the results. This volume contains the proceedings of the third German conference, held at the Rheuma-Forschungs-Institut in Aachen, March 22 to 24, and is a sequel to the proceedings of the first and second conferences of 1928 and 1930, published in 1929 and 1931 respectively. It is edited by Dr. Walter Krebs, chief of the government spa and of the Rheuma-Forschungs-Institut, and contains the following papers by its distinguished contributors: investigations on the causes of rheumatic myocarditis, Ludwig Aschoff, Freiburg; the significance of bodily constitution in the disease picture of rheumatism, Ernst Edens, Düsseldorf; roentgen therapy for diseases of joints, Rudolf Grashey, Cologne: a contribution on the relationship of periosteum and fibrous tissue to rheumatic diseases, Walter Krebs, Aachen; functional point of view and measures in the management of arthritis and arthrosis, Lothar Kreuz, Berlin; preliminary survey of advancements in the domain of rheuma research in later years, Franz Külbs, Cologne; present conceptions on our knowledge of the etiology of specific rheumatism, Paul Manteufel, Düsseldorf; a clinic on rheumatic infections with considerations on etiology and treatment, Hugo Schottmüller, Hamburg; medicinal and physical methods of treatment of "rheumatic" arthritis and arthrosis, Heinz Gehlen, Aachen; the management of myalgia and neuralgia, Hermann Hennes,

Aachen; the treatment of so-called rheumatic diseases of the vertebral column, Oskar Vontz, Aachen.

These publications on "Rheumaprobleme" should not be confused with another annual German review, Rheuma-Jahrbuch (Leo Alterthum, Berlin).

Medicolegal

Hospitals: Liability for Injuries Notwithstanding Release from Liability of Person Responsible for Original Injuries.—The plaintiff received an injury to her vertebra in an automobile collision. She was taken to the defendant hospital and was attended by her own physician. After giving her a sleep-producing drug, the physician instructed a nurse employed by the hospital to apply an electric pad to the patient's spine in a manner directed by him. In the absence of the physician, the nurse applied the pad in a different manner and as a result the patient was badly burned. Subsequently, the patient, for a consideration, released the person responsible for the automobile collision from "all claims . . . on account of injuries resulting, or to result, from" said automobile accident. She then sued the hospital solely for damages for the burns resulting from the negligence of the nurse. Judgment was given for the patient. From the trial court's denial of a motion for a new trial, the defendant hospital appealed to the court of appeals of Georgia, division no. 2.

The hospital contended that the release given by the patient to the person responsible for the automobile accident operated to release the hospital from any damages for which it might be liable as a result of the burns. The court of appeals conceded that a release might have that effect if the patient's claim was based on the aggravation of the injuries sustained in the automobile accident. But because the patient sued because of injuries that resulted from negligence of the hospital employee that caused an injury separate and distinct from the original injury, the hospital was still liable, notwithstanding the release. The fact that the original injuries furnished the condition and gave rise to the occasion by which the injuries resulting from the hospital's negligence were made possible the court regarded as immaterial. The judgment in favor of the patient was therefore affirmed.—*Piedmont Hospital v. Truitt (Ga.), 172 S. E. 237.*

Workmen's Compensation Acts: Thumb Bruise Following Use of Paint Spray Gun.—In the course of his employment, the workman bruised his thumb by constant pressure on the button of a spray gun used in painting furniture. A physician lanced the thumb and subsequently a felon developed. To recover for the resulting disability, the workman instituted proceedings under the Virginia workmen's compensation act. The industrial commission denied compensation and the workman appealed to the Supreme Court of Appeals of Virginia.

For a disability, said the Supreme Court of Appeals, to be compensable under the Virginia compensation act it must be the result of an "injury by accident." The meaning of this term was recently construed by the Virginia court in *Big Jack Overall Co.* v. *Bray* (Va.), 171 S. E. 686, where, quoting from *McCauley* v. *Imperial Woolen Co.,* 261 Pa. 312, 104 A. 617, it was said:

> If the incident which gives rise to the injurious results complained of can be classed properly as a "mishap," or "fortuitous" happening—an "untoward event, which is not expected or designed"—it is an accident within the meaning of the Workmen's Compensation Act.

In this case there was no sudden unlooked for mishap. Some two hours before stopping work, the workman noticed that his thumb was somewhat red from the continuous pressure on the button. He continued to use the thumb in the same manner, with increased soreness and discomfort. The slightly bruised thumb was the origin, or beginning, of the sequence of events that ended in its partial loss of use. The bruise was received while the workman was performing his duty in the usual and ordinary manner—a result, under the circumstance, ordinarily and naturally flowing from the conduct of the workman. It cannot be held to be an "injury by accident" within the meaning of the compensation act. The judgment of the industrial commission denying compensation to the workman was affirmed. —*Hurd v. Hesse & Hurt (Va.), 172 S. E. 289.*

City Hospitals: Liability of City for Hot Water Bottle Burn.—The city of Owatonna, Minn., owns and operates a general hospital. Only pay patients are admitted to the hospital. Profits from the operation of the hospital are placed in a hospital fund and are not used for other city purposes. Following an appendectomy performed on the plaintiff at the hospital, and while he was still under the anesthetic, his leg was burned by a hot water bottle, placed in his bed by a hospital nurse. He brought suit against the city of Owatonna. There was a judgment for the plaintiff and the city appealed to the Supreme Court of Minnesota.

The liability of the city, said the Supreme Court of Minnesota, depends on whether the city in operating the hospital was exercising a proprietary or a governmental function. If it was exercising a proprietary function, it is liable; if it was exercising a governmental function, it is not liable. In concluding that in operating the hospital the city was exercising its corporate proprietary powers, the court said that the hospital was not such a one the operation of which could properly come within the governmental function for the protection of health and suppression of disease. It was a general hospital operated for the private advantage and convenience of the inhabitants of the city. That its operation might incidentally to some extent protect society from sickness and death the court thought to be immaterial. When a city engages in activities which are of a nature ordinarily engaged in by private persons and which subject private persons to liability for negligence, the city is likewise liable for negligence. In Minnesota, owners of hospitals are liable for the negligence of their servants whether the hospital be maintained for profit or for charitable purposes. *Mulliner* v. *Evangelischer Diakonniessenverein of Minn. Dist.,* 144 Minn. 392, 175 N. W. 699. The judgment in favor of the plaintiff was accordingly affirmed.—*Borwege v. City of Owatonna (Minn.), 251 N. W. 915.*

Society Proceedings

COMING MEETINGS

American College of Surgeons, Boston, Oct. 15-19. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Hospital Association, Philadelphia, Sept. 24-28. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Roentgen Ray Society, Pittsburgh, Sept. 25-28. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.

Associated Anesthetists of the United States and Canada, Boston, Oct. 15-19. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 8-10. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Dover, Oct. 9-10. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 9-11. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Philadelphia, November 5-9. Dr. W. B. Peck, 27 East Stephenson Street, Freeport, Ill., Managing-Director.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 1-4. Dr. Hugh Wilkinson, 750 Minnesota Avenue, Kansas City, Kan., Secretary.

Kentucky State Medical Association, Harlan, Oct. 1-4. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

New England Surgical Society, Burlington, Vt., Sept. 28-29. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.

Ohio State Medical Association, Columbus, Oct. 4-6. Mr. Don K. Martin, 1005 Hartman Theatre Building, Columbus, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 29-Nov. 2. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.

Oregon State Medical Society, Corvallis, Sept. 27-29. Dr. L. Howard Smith, Medical Arts Building, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Wilkes-Barre, Oct. 1-4. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Vermont State Medical Society, Burlington, Oct. 4-5. Dr. W. G. Ricker, 33 Main St., St. Johnsbury, Secretary.

Virginia, Medical Society of, Alexandria, Oct. 9-11. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

4: 41-96 (Aug.) 1934

Pathology of Anemias of Early Infancy. G. S. Graham, Birmingham. —p. 41.

Etiology and Symptomatology of Anemias of Early Infancy. H. Kennedy, Birmingham.—p. 47.

Treatment of Anemias of Early Infancy. C. E. Abbott, Tuscaloosa. —p. 51.

Cryptorchidism and Acute Gonorrheal Epididymitis: Report of Case in Ten Year Old Boy. J. P. Robertson, Birmingham.—p. 53.

American J. Digestive Diseases and Nutrition, Chicago

1: 289-350 (July) 1934

History of Gallbladder Disease: Résumé of Symptoms. M. E. Rehfuss, Philadelphia.—p. 289.

Practical Etiologic, Pathologic and Clinical Consideration of Intestinal Ulceration, with Especial Reference to Amebic Dysentery, Bacillary Dysentery, and "Idiopathic" Ulcerative Colitis. J. Felsen, New York. —p. 297.

Insanity Equivalents and the Gastro-Enterologist. W. C. Alvarez, Rochester, Minn.—p. 305.

*Intravenous Galactose Liver Function Test: Preliminary Report. I. R. Jankelson and H. H. Lerner, Boston.—p. 310.

Unusual Clinical Syndromes Associated with Stone in the Common Bile Duct. A. M. Snell and M. W. Comfort, Rochester, Minn.—p. 312.

Composition of Pure Gastric Juice. F. Hollander, New York.—p. 319.

Recent Investigations Permitting a New Interpretation of the Results of the Conventional Titration of Gastric Juice. L. Martin, Baltimore. —p. 330.

Dissociation of the Functional Properties of the Gastric Glands Under the Influence of Fat. Armine Alley, D. W. MacKenzie Jr. and D. R. Webster, Montreal.—p. 333.

*Intensified Oral Cholecystography: Preliminary Report. W. H. Stewart and H. E. Illick, New York.—p. 337.

Treatment of Peptic Ulcer with Bacterial Vaccines (Foreign Protein): Review of the Literature with Report of Results Observed in the Treatment of Thirty-Three Patients. D. J. Sandweiss and S. G. Meyers, Detroit.—p. 338.

Treatment of Carcinoma of the Colon. W. W. Babcock, Philadelphia. —p. 342.

Intravenous Galactose Liver Function Test.—Jankelson and Lerner introduced galactose intravenously to test, indirectly, the extent of parenchymatous hepatic destruction if any was present. The patient is in a fasting state (overnight). In the morning a venous blood sample is taken and oxalated. Without removing the needle from the vein, a syringe containing 50 cc. of a 50 per cent solution of galactose is attached, and the solution is injected slowly over a period of from eight to ten minutes. Half-hourly, venous blood samples are taken for the next two hours. The authors employed the test in seven normal persons and eight patients having some pathologic condition of the liver. The results indicate that persons having a normal liver metabolize 25 Gm. of intravenously injected galactose within sixty minutes. In pathologic conditions the same amount of galactose may or may not be metabolized during a like period. The delay in its utilization depends on the degree of damage to the liver. When the degree of damage is minimal, the rate of utilization may be normal. With increasing damage the utilization of galactose takes longer. The authors emphasize the fact that, whereas the galactose liver function test of Bauer has no place in the diagnosis of liver disease in the absence of jaundice, the intravenous galactose test may show a variable amount of sugar retention within the venous blood in liver disease not accompanied by jaundice as well as that with jaundice. In the small number of cases of jaundice observed by them the intravenous galactose liver function test was positive in all, whether the cause was within the liver or in the extrahepatic bile ducts. The intrahepatic type of jaundice, however, presented the highest retention of galactose and, therefore, if any differentiation by this test is possible at all it must rest on the degree of retention and not the absence or presence of it. Negative intravenous galactose liver function tests do not exclude minimal liver damage but probably indicate a normal liver function.

Intensified Oral Cholecystography.—Stewart and Illick outline a method of intensified cholecystography, combining the methods of Antonucci and Sandstrom, in which the patient is given several cups of tea with extra sugar during the afternoon. The regular evening meal is allowed at 6 p. m. and the first dose of tetraiodophenolphthalein is given at 7 o'clock. More tea with sugar is given later in the evening. No breakfast is given on the morning of the following day. Roentgen studies are made at twelve and sixteen hours after the first dose of the dye. The noon meal consists of fruit juices, jello, fruit salad and tea. Another dose of the opaque substance is given after this. In the afternoon more tea with excess sugar is taken, and in the evening a meal similar to the luncheon. The third dose is given in the evening, and the thirty-six hour examination is made the following morning. These thirty-six hour films demonstrate remarkable concentration of the opaque bile in the gallbladder, the opacity equaling that of a barium-filled stomach. Study then may be made following the usual fatty meal to determine how well and rapidly the gallbladder empties. A one-half second exposure time, with 100 milliamperes through a fine focus tube, is used. A special speed Bucky is employed. The diagnostic detail of the thirty-six hour roentgenograms demonstrates nonopaque gallstones well. The shadow intensity obtained at thirty-six hours is far more uniform than that formerly possible with the sixteen hour method. Faint gallbladder shadows are no longer a problem but conclusive evidence of dysfunction of the mucosa. "No shadow" cases do not need the customary check-up, as the observations are now much more dependable.

American Journal of Diseases of Children, Chicago

48: 243-480 (Aug.) 1934

Congenital Hypertrophy of Muscles, Extrapyramidal Motor Disturbances and Mental Deficiency: Clinical Entity. Cornelia de Lange, Amsterdam, the Netherlands.—p. 243.

*New Auxiliary Treatment for Impetigo Contagiosa. L. Hollander and J. J. Hecht, Pittsburgh.—p. 269.

Acetarsone in Treatment of Congenital Syphilis: Comparison with Bismuth Therapy. J. F. Coppolino, Philadelphia.—p. 272.

Viosterol in Prophylaxis of Rickets in Premature Infants: Clinical, Chemical and Roentgenologic Observations. L. T. Davidson and Katharine K. Merritt, New York.—p. 281.

*Lipoid Cell Pneumonia. T. C. Goodwin, Baltimore.—p. 309.

Grasp Reflex of the New-Born Infant. C. P. Richter, Baltimore.—p. 327.

Eczema Vaccinatum. E. S. Platou, Minneapolis.—p. 333.

Auxiliary Treatment for Impetigo Contagiosa.—Hollander and Hecht used metaphen 1:500 incorporated in flexible collodion in the treatment of 234 cases of impetigo contagiosa, ten cases of ecthyma and twenty cases of infectious eczematoid dermatitis. The surface of the skin surrounding the infected area was washed with soap and water and dried thoroughly with absorbent tissue. The lesion was painted with several layers of metaphen 1:500 in collodion, which was permitted to dry layer by layer. In twenty-four hours the easily removable layers of the metaphen-collodion mixture were removed with a tissue forceps. The adherent part was left on, and the mixture was reapplied in several layers. The procedure was repeated on the third day. On the fourth day all the metaphen-collodion preparation, which by that time had curled up at the edges, was removed and with it the underlying encrustation. If the underlying skin was dry, light anointing with 2 per cent ammoniated mercury was carried out. If, however, the surface was still moist, the metaphen-collodion mixture was applied for another period of three days. Of the impetigo contagiosa cases 85 per cent were cured after an average of eight days of treatment, 75 per cent of the ecthyma cases after an average of fourteen days of treatment and all the cases of infectious eczematoid dermatitis after an average of twenty days of treatment.

Lipoid Cell Pneumonia.—Goodwin observed twenty-five cases of lipoid cell pneumonia during the past ten years. In three of these the diagnosis was established clinically; in the others, at necropsy. The ages of the children ranged between 6 months and 5 years. Various oils were responsible. Milk fat was perhaps the most frequent kind found. The children were weak or comatose and were fed by gavage, or vomited frequently, and the regurgitation of the milk was the cause of

the aspiration. Cod liver oil was present in the lungs in a number of infants, and in almost all there was the history of cough, vomiting or struggling against the administration of the oil. In four of the cases in which the amount of pulmonary involvement was the greatest, a clear history of the instillation of liquid petrolatum in the nose, or its ingestion, was obtained. The oil was identified in the lung in two instances. Rapid respiration without dyspnea and a persistent hacking cough stand out as the two most frequent complaints. A single roentgenogram is scarcely ever typical enough to do more than suggest lipoid cell pneumonia. The course of the disease is in most cases determined by the condition associated with it. There is as great a difference in the pathologic picture found at necropsy in cases of lipoid cell pneumonia as there is in the clinical picture. The author's observations confirm those of Laughlen and Pinkerton. Uncomplicated lipoid cell pneumonia offers a good prognosis. It should be suspected in small, debilitated infants who fail to gain weight and who have a chronic cough or rapid respiration. These symptoms, in the absence of fever, suggest lipoid cell pneumonia. Tuberculosis must be ruled out. The blood picture is normal in uncomplicated instances and is in conformity with the picture of coincident infections. The roentgenogram is of the greatest help. The consolidation is central, bilateral, more extensive on the right and apt to be posterior. The roentgen shadow is always more extensive than the amount of consolidation suggested by physical examination. Roentgenograms taken weeks apart may show scarcely any difference in the appearance of the lungs. The author has never seen cavitation in lipoid cell pneumonia or calcification in the bronchial lymph nodes. The tendency for the lesion to disappear gradually makes the picture unlike that of a neoplasm or congenital malformation, and the physical signs are rarely those of atelectasis. Good nursing with a frequent change of position and the avoidance of infection of the upper respiratory tract is the only treatment. It is unwise to use drops of oil in the nose of any small or weak infant, and liquid petrolatum as a cathartic should not be given. When cod liver oil is taken poorly, it is best to substitute one of the more concentrated vitamin D preparations. Care in feeding and gavage done only by experienced persons will decrease the incidence of pneumonia from the aspiration of foodstuffs.

American Journal of Hygiene, Baltimore

20: 1-258 (July) 1934

Morphology, Periodicity and Course of Infection of Plasmodium Brasilianum in Panamanian Monkeys. W. H. Taliaferro and Lucy Graves Taliaferro.—p. 1.
Alteration in Time of Sporulation of Plasmodium Brasilianum in Monkeys by Reversal of Light and Dark. W. H. Taliaferro and Lucy Graves Taliaferro.—p. 50.
Superinfection and Protective Experiments with Plasmodium Brasilianum in Monkeys. W. H. Taliaferro and Lucy Graves Taliaferro.—p. 60.
Adult Size in Relation to Reproduction of Avian Malaria Parasite, Plasmodium Cathemerium. G. H. Boyd and L. H. Allen, Augusta, Ga.—p. 73.
Studies of Endamoeba Histolytica and Other Intestinal Protozoa in Tennessee: VII. Histopathology of Intestinal Amebiasis in the Kitten and in Man. H. E. Meleney, Nashville, Tenn., and W. W. Frye.—p. 84.
Observations and Experiments on Conjugation of Balantidium from the Chimpanzee. E. C. Nelson, Baltimore.—p. 106.
Experimental Trypanosoma Brucei Infection and Immunity in Various Species of Peromyscus (American Deer Mice). A. Packchanian, Ann Arbor, Mich.—p. 135 .
Serologic Specificity of Bacterial Carbohydrates, with Especial Reference to Type II Pneumococcus and Heterophile Strain of Bacterium Lepisepticum. J. H. Dingle, Baltimore.—p. 148.
Effect of Vitamin A Deficiency on Resistance of Rats to Infection with Trichinella Spiralis. O. R. McCoy, Rochester, N. Y.—p. 169.
Studies of Acute Respiratory Infections: IV. Filter-Passing Anaerobic Bacteria from Cases of Epidemic Influenza in New York City in 1928-1929. W. C. Noble Jr. and D. H. Brainard, New York.—p. 181.
Suggested Etiologic Relationship of Certain Strains of Green Streptococci to Epidemic Influenza: Note. W. C. Noble Jr. and D. H. Brainard, New York.—p. 191.
Influence of Heat and Light on Nasal Obstruction. C.-E. A. Winslow, L. Greenburg and L. P. Herrington, New Haven, Conn.—p. 195.
Simple Technic for Ultrafiltration. J. J. Quigley, Albany, N. Y.—p. 218.
Studies on Purification of Diphtheria Toxin by Ultrafiltration. A. Wadsworth and J. J. Quigley, Albany, N. Y.—p. 225.
Some American Species of Phlebotomus with Short Terminal Palpal Segments. F. M. Root, Baltimore.—p. 233.
Comparative Susceptibility of Anopheles Quadrimaculatus Say and Anopheles Crucians Wied. (Inland Variety) to the Parasites of Human Malaria. M. F. Boyd and K. K. Stratman-Thomas, Tallahassee, Fla.—p. 247.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

32: 1-144 (July) 1934

*Agenesis of Corpus Callosum: Its Diagnosis by Encephalography: Report of Three Cases. L. M. Davidoff and C. G. Dyke, New York.—p. 1.
Roentgenologic Diagnosis of Chronic Pulmonary Emphysema. W. W. Fray, Rochester, N. Y.—p. 11.
Mediastinitis. K. Kornblum and L. H. Osmond, Philadelphia.—p. 23.
Roentgen Diagnosis of Carcinoma at the Cardia. W. H. Stewart and H. E. Illick, New York.—p. 43.
*Osteopoikilosis: Report of Unusual Case. B. H. Nichols and E. L. Shiflett, Cleveland.—p. 52.
Technical Considerations in Arteriography of the Extremities with Thorotrast. J. R. Veal and Elizabeth M. McFetridge, New Orleans.—p. 64.
Roentgen Therapy of Hyperparathyroidism. E. A. Merritt and E. M. McPeak, Washington, D. C.—p. 72.
*Irradiation in Treatment of Psoriasis. R. Rosh, New York.—p. 82.
Clinical Observations on Carcinoma of the Uterine Cervix After Radiation Therapy. H. Schmitz, Chicago.—p. 87.
Thicknesses of Aluminum to Be Used in Addition to Copper Filters. A. Mutscheller, New York.—p. 92.

Defective Development of Corpus Callosum.—Davidoff and Dyke describe two cases of agenesis of the corpus callosum diagnosed during life. The diagnosis was based on the encephalographic observations and was confirmed by necropsy in a third case. The cardinal changes noted in the encephalograms of all three cases are (1) marked separation of the lateral ventricles, (2) angular dorsal margins of the lateral ventricles, (3) concave mesial borders of the lateral ventricles, (4) dilatation of the caudal portions of the lateral ventricles, (5) elongation of the interventricular foramina, (6) dorsal extension and dilatation of the third ventricle and (7) radial arrangement of the mesial cerebral sulci round the roof of the third ventricle and their extension through the zone usually occupied by the corpus callosum.

Osteopoikilosis.—Nichols and Shiflett present a case of osteopoikilosis with pituitary disturbances, which has been observed for seventeen years. The symptoms led to a diagnosis of hypopituitarism and osteomas and numerous calcium deposits in bone and later of hypopituitarism (although roentgenograms of the skull showed a small, apparently normal, sella), hypothyroidism and osteopoikilosis. The onset of the patient's illness dates to early adolescence and has continued with few variations to the present. Roentgenograms show multiple osteochondromas with at least one lesion resembling a cyst, multiple disseminated areas of bone density characteristic of osteopoikilosis and apparently a definite and marked proliferative periostitis of the long bones and of the bones of the hands and feet, which at the present time is severe. The authors cannot make a definite statement regarding the type of pituitary involvement, but clinically the patient is suffering from hypopituitarism. They believe that the lesions of osteopoikilosis are within the spongious part of the bone and not exostoses originating in the cortex, and that the lesions are probably formed early in life and do not show progression either in number or size. They have no reason to infer that the exostoses and the periosteal proliferation are a result of extensions of the lesions described as osteopoikilosis. It would appear that they are of separate origin and that the periostitis and exostoses have been progressive, while the areas within the spongiosa have been stationary. Since only bones formed in membrane have not been reported as involved, it would seem logical to infer that osteopoikilosis, in some way, is related to enchondral bone formation and that it results from an abnormal functional relationship between the osteoblastic and osteoclastic activity of cells during the period of growth, but the histopathologic study made by Schmorl does not support this hypothesis. The inference of endochondral relationship also is supported by the fact that the diaphyses, metaphyses and epiphyses are involved, indicating that the process is associated with the period of growth and continues until the epiphyses are united. Bearing out the theory of Ledoux-Lebord, Chabaneix and Dessane that typhoid might be an etiologic factor, the authors' patient had had typhoid.

Irradiation in Treatment of Psoriasis.—The method of Rosh in the roentgen treatment of psoriasis consists in the application of high voltage roentgen rays to the spine at those levels which correspond with the nerve supply to the affected

areas of the body. During the period of nine years he has treated forty-six cases of generalized psoriasis. Twenty-two were treated locally with superficial roentgen therapy; and twenty-four, since 1928, were treated with high voltage roentgen therapy over the upper and lower thoracic spine. In the latter cases the disease had existed for periods varying from six to twenty years. None of the patients were hospitalized and they were able to follow their usual mode of life. No effects attributable to the season of the year or climate were observed. In most cases, following treatment, patients noticed at first an increase in itching, which was soon followed by a complete cessation of this symptom. About three weeks after treatment it was noted that the color faded from the center of the affected areas, the scales became loosened, and the surrounding infiltration in the skin was diminished. In most cases a second series of treatments was given after a period of from six to eight weeks, during which time the majority of the areas were replaced by a brownish pigmentation. Complete disappearance of the lesions occurred only in from three to six months after the administration of the last treatment. In some persistent cases a year elapsed before the body was freed from the psoriasis.

American Journal of Tropical Medicine, Baltimore

14: 299-362 (July) 1934

Development of Tropical Medicine in the United States. E. B. McKinley, Washington, D. C.—p. 299.
Atabrine in the Treatment of Malaria in the Philippine Islands. P. E. McNabb and S. C. Schwartz, Manila, P. I.—p. 309.
Transmission of Malaria in Drug Addicts by Intravenous Use of Narcotics. J. A. Bradley, New Orleans.—p. 319.
Plasmodium Falciparum Welch, 1897: Does Direct Division of the Parasite Precede Schizogony? H. E. Hingst, Columbia, S. C.—p. 325.
Field Experiment in Quinine Treatment. R. K. Collins, Paris, France.—p. 329.
Neglected Early Reference to the Malarial Vector in the Philippines. P. F. Russell, New York.—p. 339.
*Attempts to Determine Amount of Yellow Fever Virus Injected by the Bite of a Single Infected Stegomyia Mosquito. N. C. Davis, Bahia, Brazil.—p. 343.
Intestinal Acariasis Due to Tyroglyphus Longior Gervais. E. H. Hinman and R. H. Kampmeier, New Orleans.—p. 355.

Amount of Yellow Fever Virus Injected by Mosquito Bite.—Davis induced stegomyia mosquitoes infected with yellow fever virus to feed on new-born white mice. The latter were killed immediately and extracts were made. The extracts were injected in graded doses into rhesus monkeys. In two experiments the titrations indicated that each mosquito injected at least 100 infective doses of virus during the act of feeding. Mosquitoes from one lot, which was later used in a feeding experiment on a mouse, were titrated immediately following the infective blood meal and again after ten days. A decrease in titer during the interval confirmed previous observations. Yellow fever virus within the body of the mosquito appears not to increase but rather to diminish in quantity. From a comparison of the amounts of virus in the whole insects and in the baby mouse after being fed on by mosquitoes from the same lot it is shown that probably about 1 per cent of the total virus content was injected at the time of biting.

Archives of Neurology and Psychiatry, Chicago

32: 257-464 (Aug.) 1934

*Cerebral Blood Flow Preceding and Accompanying Epileptic Seizures in Man. F. A. Gibbs, W. G. Lennox and E. L. Gibbs, Boston.—p. 257.
Galvanic Skin Reflex and Blood Pressure Reactions in Psychotic States: Reactions to Sensory, Indifferent, Ideational and Crucial Ideational Stimuli. C. W. Darrow and A. P. Solomon, Chicago.—p. 273.
*Chordomas of the Cranium and Cervical Portion of the Spine: Review of the Literature with Report of Case. G. M. Hass, Boston.—p. 300.
Depressions with Tension: Their Relation to General Problem of Tension. W. Muncie, Baltimore.—p. 328.
Handwriting of Criminals: Experimental Study. C. Quinan, San Francisco.—p. 350.
Historical Notes on Constitution and Individuality. S. E. Jelliffe, New York.—p. 359.
History of Peripheral Neuritis as a Clinical Entity. H. R. Viets, Boston.—p. 377.

Cerebral Blood Flow in Epileptic Seizures.—By means of a thermo-electric blood flow recorder inserted through a hollow needle into the internal jugular vein of persons subject to epilepsy, Gibbs and his co-workers recorded changes in blood flow through the brain with reference to grand and petit mal seizures. In none of the ten patients studied was there evidence of a significant reduction in blood flow immediately preceding the onset of the seizures. During severe convulsions there was a great increase in blood flow. The changes that accompanied the seizures were the result rather than the cause of the seizures. This evidence is against the theory of acute widespread anemia of the brain as an immediate cause of epileptic seizures.

Chordomas of the Cranium and the Spine.—Hass reviews a collected series of fifty-six chordomas and presents an example of a diffuse type of spheno-occipital chordoma, which produced symptoms because of involvement of various cranial nerves and of the brain stem. The forward bulging of the epipharyngeal wall and the destruction of the basilar process of the occipital bone, the anterior arch of the atlas and the tip of the dens epistrophei (as shown by roentgenograms) were fairly characteristic of a malignant chordoma. Necropsy disclosed a tumor of relatively slow growth, which projected upward from the floor of the posterior fossa anterior to the foramen magnum. The asymmetry of the skull and the anomalous vertebral artery lend strength to the theory that chordomas rise from rests of notochordal tissue displaced during the period of embryonic development.

Archives of Otolaryngology, Chicago

20: 139-296 (Aug.) 1934

Treatment of Labyrinthitis. I. Friesner and H. Rosenwasser, New York.—p. 139.
Tuberculosis of Larynx. G. M. Van Poole, Honolulu, Hawaii.—p. 152.
Modern Surgery in Diphtheria: Observations on Six Thousand and Eleven Cases. C. W. Bailey, Rocky Mount, N. C.—p. 162.
*Conservative Treatment of Petrositis: Report of Two Cases with Recovery Without Operation. S. D. Greenfield, Brooklyn.—p. 172.
*Use of Extract of Suprarenal Cortex in Pyogenic Infections. W. F. Wenner and A. J. Cone, St. Louis.—p. 178.
Visualization of Accessory Sinuses by Proetz Method. J. C. Dickson, Houston, Texas, and W. J. Marquis, Newark, N. J.—p. 188.
Anatomic Studies of Petrous Portion of Temporal Bone. M. C. Myerson, H. Rubin and J. G. Gilbert, New York.—p. 195.

Conservative Treatment of Petrositis.—Greenfield believes that, in view of the fact that the discharge in petrositis does not originate in the tympanum but comes through the latter from the cells situated in the petrous pyramid, one should regard the presence of a profusely discharging ear in a case of petrositis as a most favorable therapeutic phenomenon. He raises the question as to whether or not this perforating channel through the tympanum, spontaneously created, may not in some instances be sufficient to accomplish a cure without operative intervention. If such is the case, it may be advisable to postpone operation in patients in whom the aural discharge is profuse and in whom invasion of the intracranial structures does not appear imminent. That spontaneous cure does take place is confirmed by the fact that the vast majority of patients with the so-called Gradenigo syndrome recover without operation. Etiologically the two conditions are identical. Anatomically they both represent involvement along certain groups of cells leading to the region of the apex of the petrous pyramid. Pathologically, however, petrositis represents a more advanced, a more widespread and a more prolonged process. It has a tendency to involve the deeper cellular structures rather than the superficial. Therefore it is reasonable to expect that a similar termination may be effected in the cases of petrositis in which the aural discharge is profuse. In many instances there is no reason why the drainage from this route may not be sufficient to cause spontaneous resolution. The author reports two cases of petrositis in which no operation was performed because of the profuse aural discharge. Both patients recovered.

Suprarenal Cortex Extract in Pyogenic Infections.—The experimental results in the treatment, with suprarenal cortex extract, of rabbits that had experimental maxillary sinusitis supplied sufficient grounds to Wenner and Cone to warrant the clinical use of cortical extract in pyogenic infections. The extract used was prepared from whole beef suprarenals according to the method of Zwemer, Agate and Schroeder and of Zwemer, Agate and Sullivan. The dosage varied from 2 to 7 cc., given intramuscularly at intervals of two or more days. The clinical results indicate that cortical

extract was effective in bringing about improvement. The extract tends to reduce the temperature when it is elevated. The patients feel better generally. They are less easily fatigued and can withstand operative procedures much better. No direct effect of the extract on the total and Schilling differential white cell counts could be determined. The blood picture improved with the clinical improvement of the patient. No significant changes were observed in patients presenting normal white cell counts. In cases of acute suppurative otitis with osseous involvement, cortical extract did not alter the necessity for surgical intervention. However, when cortical extract was used preoperatively the postoperative course was better. The extract was effective in infections limited to the mucous membrane of the nose, sinuses, larynx and nasopharynx and in cases of cellulitis. In patients with a well developed inflammatory reaction in the mucous membranes and in whom the resistance to infection was decidedly poor, the best results were obtained when the extract was given at intervals not longer than forty-eight hours. The response to pyogenic infections is probably due, in part, to an increased activity of the leukocytes. The opsonic power of the serum of both suprarenalectomized and normal animals is increased by injections of cortical extract (Blanchard). The authors confirmed Blanchard's observations on normal animals. Cortical extract injected intramuscularly increases the phagocytic activity of the leukocytes, but applied directly to suspensions of white cells it produces no noticeable change.

Arkansas Medical Society Journal, Fort Smith

31: 41-54 (Aug.) 1934

Some Suggestions in Examinations of the Chest. O. W. Bethea, New Orleans.—p. 41.
Progress in Obstetrics. S. B. Hinkle, Little Rock.—p. 46.

Canadian Medical Association Journal, Montreal

31: 119-236 (Aug.) 1934

Growth, Innocent and Malignant. W. Boyd, Winnipeg, Manit.—p. 124.
Staphylococcus Antitoxic Serum in Treatment of Acute Staphylococcic Infections and Toxemias. C. E. Dolman, Toronto.—p. 130.
Histologic Demonstration of Siliceous Material by Micro-Incineration. D. A. Irwin, Toronto.—p. 135.
*Micro-Incineration as Aid in Diagnosis of Silicosis. D. A. Irwin, Toronto.—p. 140.
Riedel's Struma: Report of Seven Cases. D. Eisen, Toronto.—p. 144.
Relationship Between Riedel's Struma and Struma Lymphomatosa (Hashimoto). D. Eisen, Toronto.—p. 147.
Medicochirurgical Aspects of Genito-Urinary Tuberculosis. J. L. Wiseman, Winnipeg, Manit.—p. 151.
Cyclopropane Anesthesia: Clinical Record of Three Hundred and Fifty Administrations. H. R. Griffith, Montreal.—p. 157.
Tuberculosis an Insidious Disease: Analysis of One Hundred Consecutive Case Histories of Men Thirty-Five Years of Age or Over. D. A. Stewart and E. L. Ross, Ninette, Manit.—p. 160.
Early Diagnosis of Cancer in the Bladder, Prostate and Kidney. J. C. McClelland, Toronto.—p. 165.
*Intravenous Injections of Animal Charcoal in Treatment of Varied Infections: Clinical and Experimental Study. E. St. Jacques, Montreal.—p. 168.
Some Clinical Features of Complete Heart Block. K. Gordon, Montreal.—p. 171.
Notes on One Hundred Obstetric Cases in Rural Practice. A. F. McKenzie, Monkton, Ont.—p. 175.
Huntington's Chorea: Report of Case. C. A. Buck, Toronto.—p. 178.

Micro-Incineration as Aid in Diagnosis of Silicosis.—Irwin studied lung tissues from various types of pneumonoconioses in order that the amount and relation of siliceous material present in the tissues to the histologic structure in which it was contained might be determined. This was accomplished by the micro-incineration of paraffin sections and the treatment of the ash with concentrated hydrochloric acid to remove the nonsiliceous material. By the use of serial sections the tissue ash can be related definitely to histologic structure. The lung tissues from ten gold miners, a coal miner, an iron miner, a Scotch stonecutter, a sandblaster, an abrasive soap worker and twelve rabbits with silicotic lesions produced by experimental dusting with silica were examined. In the human lungs the chemical assay for siliceous material was relatively high, and microscopically there was much nodular fibrosis, shown by micro-incineration to be associated with a high content of siliceous material. In most of the human cases there was an accompanying tuberculous infection. The ash content of the areas of fibrosis seen in this series of lungs was apparently indicative of the pathogenesis of those lesions. The experimental lesions in the rabbit were not complicated by tuberculous infection. An examination of the incinerated acid-treated sections of these lungs clearly demonstrated all areas which in the corresponding stained sections revealed fibrosis that had the appearance of being siliceous in origin. Areas of obvious tuberculous fibrosis presented an ash much less dense than the ash of siliceous nodules. This ash when treated with acid disappeared either entirely or partially, leaving a few scattered siliceous particles. The ash pattern of definite silicotic nodules is so typical and constant that the author infers that, if an ash is present, it represents a silicotic nodule, even if the corresponding area in the stained section has degenerated beyond recognition. If an area of ash does not contain any siliceous particles or contains only a few scattered siliceous particles, he also infers that such an ash represents an area of nonsiliceous fibrosis.

Intravenous Injections of Animal Charcoal in Infections.—St. Jacques has given more than 300 intravenous injections of animal charcoal in more than 150 patients having various infections (metrosalpingitis, puerperal infection, phlebitis, perineal laceration, lung infection, cholecystitis, furunculosis, gonorrheal arthritis, gonococcic epididymitis, nephrosis and nephrosis consecutive to puerperal infection), with not one untoward sequel. In some cases a slight rise of temperature occurred in the hour following the injection. The general circulation was unaffected in any way. Of the first 100 admissions only three were not cured of their infectious process. In the 200 later admissions the results were equally good. The preparation used was a 2 per cent suspension of animal charcoal in distilled water. The piston, syringe barrel and needle must be paraffined beforehand to prevent clogging by the particles of carbon. How charcoal acts is not known biologically, but it does stimulate phagocytosis as well as the endothelial cells of the spleen, liver and bone marrow.

Georgia Medical Association Journal, Atlanta

23: 245-286 (July) 1934

Endocrine Aspects of Gynecology. E. Novak, Baltimore.—p. 245.
Medical Economics as Related to Patients of Low Income Group. L. M. Gaines, Atlanta.—p. 250.
Irritable Colon. J. D. Gray, Augusta.—p. 259.
Hydrochloric Acid Treatment in Monoxide Poison: Case Report. H. L. Barker, Carrollton.—p. 264.
Some General Considerations in Treating Accessory Sinuses of Nose. G. H. Lang, Savannah.—p. 265.
Some Observations with Intravenous Cholecystography. L. Fort, Atlanta.—p. 269.
"Blinding Filaria" of Guatemala (Onchocerca Coecutiens): Report of Case Which Occurred in Georgia. W. D. Mixson, R. L. Johnson and G. E. Atwood, Waycross.—p. 272.

Illinois Medical Journal, Chicago

66: 101-200 (Aug.) 1934

Historical Development of Diagnosis of Heart Disease. W. L. Bierring, Des Moines, Iowa.—p. 115.
Experiences in Treatment of Hypertension with the X-Ray. J. H. Hutton, Chicago.—p. 120.
Prognosis in Heart Disease. O. P. J. Falk, St. Louis.—p. 126.
Symptoms and Treatment of the Rheumatic Child. R. A. Black, Chicago.—p. 133.
New Aspects of the Public Health Situation. F. J. Jirka, Springfield.—p. 139.
Osteomyelitis of the Skull in Frontal Sinusitis. M. A. Glatt, Chicago.—p. 146.
Moses Gunn, Pioneer Chicago Surgeon. N. Flaxman, Chicago.—p. 157.
Psychiatry and the General Practitioner. W. W. Eichelberger, Alton.—p. 160.
Hemorrhagic Infarction of the Greater Omentum. L. E. Hines, Chicago.—p. 166.
Sexual Neurosis in Men: Etiology and Hygiene. L. M. Beilin, Chicago.—p. 167.
Some Remarks Concerning Cephalopelvic Disproportion. W. C. Stude, St. Louis.—p. 171.
Problems in the Diagnosis and Management of Pulmonary Tuberculosis. H. O. Deuss, Chicago.—p. 175.
Rhinitis with Vincent's Organisms. C. H. Lockwood, Chicago.—p. 179.
Human Breast Milk in Treatment of Endocrine Obesity. C. A. Lapin, Chicago.—p. 179.
Difference in Reactions of Alcoholics. B. Lemchen, Dunning.—p. 180.
Sodium Salicylate, Calcium Gluconate, Parathormone, Basic Medicines in the Acute Inflammatory Diseases, Act as Specific Remedy in Treatment of Lobar Pneumonia. H. O. Nyvall, Chicago.—p. 181.
Ectopic Pregnancy: Its Recognition. W. R. Young, Geneseo.—p. 189.
Increase in Mental Disorders: Special Remarks on Manic-Depressive Groups. F. W. Sokolowski, Alton.—p. 194.
Quackery in Treatment of Cataract. T. D. Allen, Chicago.—p. 196.

Iowa State Medical Society Journal, Des Moines

24: 313-424 (July) 1934

Oration in Surgery: Animating Factors in Surgical History. E. M. Myers, Boone.—p. 313.
Shall Organized Medicine Survive? O. J. Fay, Des Moines.—p. 318.
Leukocyte Blood Pictures in Acute Infections. M. P. Neal, Columbia, Mo.—p. 321.
Primary Carcinoma of Lung and Its Differential Diagnosis. R. A. Berger, Iowa City.—p. 327.
Newer Treatment of Gonorrhea in the Immature Female. J. Brown, Des Moines.—p. 331.
Differential Diagnoses of Acute Appendicitis in the Female. J. H. Wise, Cherokee.—p. 334.

Kentucky Medical Journal, Bowling Green

32: 389-442 (Aug.) 1934

Sympathetic Nervous System as a Causative Factor in Atypical Neuralgia: Review. S. B. Marks, Lexington.—p. 393.
Lens Extract Therapy in Cataract. C. K. Beck, Louisville.—p. 397.
One Hundred Intracapsular Cataract Extractions by the Knapp Method. C. D. Townes, Louisville.—p. 399.
Vasomotor Rhinitis: Rhinologist's Point of View. K. N. Victor, Louisville.—p. 403.
Vasomotor Rhinitis from an Allergist's Point of View. A. E. Cohen, Louisville.—p. 405.
Newer Medical Treatment of Glaucoma. F. Pirkey, Louisville.—p. 409.
Successful Treatment of Dacryocystitis with Less Radical Surgery. J. D. Williams, Ashland.—p. 412.
Practical Consideration of Alterations of the Voice. W. R. Pryor, Louisville.—p. 415.
Primary Carcinoma of Tube: Report of Case. L. W. Frank, Louisville.—p. 419.
Chylothorax: Report of Case. R. L. Bone and F. P. Strother, Madisonville.—p. 420.
Case for Diagnosis: Case Report. V. Simpson, Louisville.—p. 421.
Plans and Policies of the State Department of Health. A. T. McCormack, Louisville.—p. 427.
Plans and Policies of the City Health Department. H. R. Leavell, Louisville.—p. 429.
Plans and Policies of the Jefferson County Health Department. J. D. Trawick, Louisville.—p. 431.
Elephantiasis: Case Report. D. P. Hall, Louisville.—p. 432.
More Common Gastro-Intestinal Symptoms or Diseases Resulting from Focal Infection. F. M. Stites Jr., Louisville.—p. 438.

Maine Medical Journal, Portland

25: 141-158 (July) 1934

Preoperative and Postoperative Treatment. P. P. Thompson, Portland.—p. 143.
Tetanus Followed by Agranulocytic Angina: Case Report. J. Reed, Bridgton.—p. 150.

25: 159-174 (Aug.) 1934

Sterility. M. F. Ridlon, Bangor.—p. 160.
Acute Head Injuries. H. E. Macdonald, Portland.—p. 163.

New England Journal of Medicine, Boston

211: 189-236 (Aug. 2) 1934

Social Conditioning of Visceral Activities. A. Myerson, Boston.—p. 189.
Cancer and the General Practitioner. H. Jackson Jr., Boston.—p. 193.
*Chronicity of Rheumatic Fever. H. F. Swift, New York.—p. 197.
Tuberculosis as It Affects the Physician's Practice. H. D. Chadwick, Newtonville, Mass.—p. 204.
Rupture of Intervertebral Disk with Involvement of Spinal Canal. W. J. Mixter and J. S. Barr, Boston.—p. 210.
Teaching Medical Students the Social Implications of Sickness. Ida M. Cannon, Boston.—p. 216.
Management of Gonorrhea: II. Clinical Diagnosis of Gonorrhea. The Neisserian Medical Society of Massachusetts.—p. 221.

Chronicity of Rheumatic Fever.—Swift states that, while the symptoms and signs of rheumatic fever are often acute and severe, there occur in most cases additional features pointing to chronicity. The manifestations indicative of chronicity are the granulomatous nature of the typical pathologic lesions, a familial or inherited background, prolonged low grade fever and high pulse rate, an apparent instability of the heat regulating center, persisting or recurring arthritis, subcutaneous fibroid nodules, erythema marginatum and progressive and persistent valvulitis. Additional signs of chronicity may be obtained from such laboratory evidence as abnormal electrocardiograms, persisting leukocytosis and accelerated erythrocyte sedimentation rates. A long persisting tendency to recurrences or to new attacks of rheumatic fever is found in persons who have once suffered from the disease, and infections of the upper respiratory tract in such patients are much more likely to be followed by rheumatic fever than is the case in normal persons. Because chronicity in a disease or in susceptibility to that disease indicates chronic measures for its treatment or prevention, it is necessary to be on the lookout in each case for manifestations indicating chronicity so that, when they occur, suitable prolonged therapy can be applied.

Oklahoma State Medical Assn. Journal, McAlester

27: 239-276 (July) 1934

Diagnosis and Treatment of Rabies. W. F. Keller, Oklahoma City.—p. 239.
The Treatment of Early Syphilis. C. L. Brundage, Oklahoma City.—p. 243.
Acute Surgical Abdomen in Everyday Practice. F. H. McGregor, Mangum.—p. 247.
Anal Abscess and Anal Fistula. N. D. Smith, Rochester, Minn.—p. 249.
Peripheral Vascular Diseases of the Extremities. J. B. Morey, Ada.—p. 253.

Pennsylvania Medical Journal, Harrisburg

37: 795-876 (July) 1934

Sterility in the Male. F. R. Hagner, Washington, D. C.—p. 795.
Biliary Tract Disease: End Results of Operations. I. S. Ravdin, Philadelphia.—p. 799.
Dental Conditions and the Otolaryngologist. W. Ersner, Philadelphia.—p. 804.
Purpura Hemorrhagica: Intravenous Gold as Etiologic Factor. H. W. Jones, L. M. Tocantins and E. F. Corson, Philadelphia.—p. 809.
Importance of Accurate Medical Histories and Careful Physical Examinations in Lowering the Cost of Medical Service. A. Stengel, Philadelphia.—p. 811.
Evils Associated with Mistaken Pessimistic Prognoses. E. J. G. Beardsley, Philadelphia.—p. 814.
Acute Lymphatic Aleukemic Leukemia. J. M. Higgins, Sayre.—p. 818.
Horseshoe Kidney, Congenital Bilateral Hydronephrosis and Hydro-Ureter: Roentgenologic Aspects. L. Solis-Cohen and S. Bruck, Philadelphia.—p. 819.
Intrinsic Carcinoma of Larynx. J. H. McCready, Pittsburgh.—p. 824.
Toxic Cirrhosis of Liver Caused by Cinchophen and Its Derivatives. S. D. Conklin, Sayre.—p. 827.
Is Cancer Education Effective? J. M. Wainwright, Scranton.—p. 831.
The Medical Profession Meets a Crisis. R. L. Anderson, Pittsburgh.—p. 835.

Philippine Journal of Science, Manila

53: 379-516 (April) 1934. Partial Index

Vitamin Content of Philippine Foods: II. Vitamin C in Various Fruits and Vegetables. A. J. Hermano and G. Sepulveda Jr., Manila.—p. 379.
Automatic Distributing Machine for Paris Green Mixtures. P. F. Russell, New York, and L. S. Eaton, Manila.—p. 497.

Psychoanalytic Quarterly, Albany, N. Y.

3: 339-500 (July) 1934

Problem of Constitution in Psychopathology. G. Zilboorg, New York.—p. 339.
Clinical Fragments. D. Feigenbaum, New York.—p. 363.
The Voice as (Female) Phallus. H. A. Bunker Jr., New York.—p. 391.
Body Symbolization and Development of Language. L. S. Kubie, New York.—p. 430.
Critical Consideration of Bernfeld and Feitelberg's Theory of Psychic Energy. W. J. Spring, New York.—p. 445.

Surgery, Gynecology and Obstetrics, Chicago

59: 149-276 (Aug.) 1934

Behavior of Transplanted Bone: Clinical Consideration. M. Harbin and K. E. Liber, Cleveland.—p. 149.
Method for Determining Time of Catgut Digestion in Vitro. C. J. Kraissl and F. L. Meleny, New York.—p. 161.
Mesentericoparietal Hernia: Duodenal Hernias of Treitz. J. J. Longacre, Cincinnati.—p. 165.
Study of Various Kidney Function Tests in Relation to Toxemias of Pregnancy. J. F. Cadden and C. M. McLane, New York.—p. 177.
Friedman Test in Hydatid Mole. M. Y. Dabney and Eugenia B. Dabney, Birmingham, Ala.—p. 185.
Lowered Mortality in Acute Appendicitis and Basis Therefor. E. E. Arnheim and H. Neuhof, New York.—p. 189.
Abdominal Incision in Lesions of Rectum and Rectosigmoid as Related to Colostomy. R. R. Best, Omaha.—p. 194.
Peptic Ulcer of Meckel's Diverticulum: Report of Two Cases and Review of Literature. L. B. Johnston and G. Renner Jr., Cincinnati.—p. 198.
Urinary Calculi Associated with Parathyroid Disease. F. H. Colby, Boston.—p. 210.
*Extrapleural Pneumolysis with Paraffin Pack in Treatment of Pulmonary Tuberculosis. J. R. Head, Chicago.—p. 215.
Intra-Uterine Diagnosis of Monstrosities. G. W. Gustafson, Indianapolis.—p. 223.
*Treatment of Suppurative Osteomyelitis of Mandible. L. J. Miltner and J. J. Wolfe, Peiping, China.—p. 226.
Explanation of Prolonged Labor in Cases of Occipitoposterior Position. C. Burger, Budapest, Hungary.—p. 236.

Extrapleural Pneumolysis with Paraffin Pack.—Head believes that extrapleural pneumolysis with the paraffin pack

has a definite place in surgical treatment of pulmonary tuberculosis. The complications caused by the foreign body, which have deterred many from using it, have been largely eliminated. It has the advantages of being simpler, safer and less deforming than thoracoplasty and of making a strictly localized collapse of diseased lung without sacrificing vital capacity. It has increased the number of patients amenable to collapse therapy. Sauerbruch and Brauer have changed their ideas recently and now believe it the operation of choice for small apical cavities. It has been the author's experience that in cases in which the cavity does not extend lower than the fourth rib at the spine it is reasonably certain of producing the desired result. For larger cavities, thoracoplasty is more certain. When the indications are doubtful, one may be influenced by the consideration that the lesser operation may suffice and that, if it does not, a later thoracoplasty will be more certainly effective for the partial collapse already provided. He reports the results that he obtained in twenty-eight cases, which have been so satisfactory that at present, when confronted with large apical cavities, he uses a paraffin pack as a preliminary operation.

Treatment of Osteomyelitis of Mandible.—Miltner and Wolfe describe a method for treating the chronic stage of suppurative osteomyelitis of the mandible, which incorporates the following steps: 1. Removal of the necrotic outer plate of the mandible as soon as possible during the early chronic stage (i. e., twenty-one days after the onset). The necrotic bone is removed through a wide external approach and may be excised before it has separated spontaneously in the form of a sequestrum. In case of massive necrosis of both plates of the mandible, sequestrectomy is delayed until an involucrum has formed. 2. Removal of teeth over the area of osteomyelitis. These teeth are always loose and bathed in pus, and in most instances their pulp tissue is necrotic. 3. Exteriorization of the tooth sockets and partial resection of the alveolar process with complete closure of the gum margins to prevent further drainage of purulent material into the oral cavity. 4. Immobilization of the jaw. The authors present eight cases that were treated successfully by this method of management. The results have been encouraging and, they believe, superior to those which have been obtained by more conservative methods of treatment.

Tennessee State Medical Assn. Journal, Nashville

27: 235-282 (July) 1934

Present-Day Diagnosis and Management of Cancer of Rectum: Notes. F. W. Rankin, Lexington, Ky.—p. 235.
Problems of Tuberculous Infection in Childhood. G. D. LeQuire, Maryville.—p. 241.
Gas Gangrene. P. A. Perkins, Memphis.—p. 246.
Use of Unna's Paste Bandage in Treatment of Pathologic Conditions of the Lower Extremities. E. R. Campbell, Chattanooga.—p. 252.
Factors That Influence Neonatal Mortality. M. S. Lewis, Nashville.—p. 257.
Intra-Ocular Foreign Bodies. E. C. Ellett and R. O. Rychener, Memphis.—p. 262.

Yale Journal of Biology and Medicine, New Haven

6: 571-636 (July) 1934

Bedside Diagnosis: Some Discursive Remarks. G. Blumer, New Haven, Conn.—p. 571.
Retrobulbar Neuritis Due to Thallium Poisoning: Further Notes. W. Mahoney, New Haven, Conn.—p. 583.
*Pneumonia in Children Following Aspiration of Oil and Fat: Clinical and Pathologic Report of Two Cases. D. M. Grayzel and J. J. DuMortier, New Haven, Conn.—p. 599.
Psychology in Relation to Medicine. W. R. Miles, New Haven, Conn.—p. 603.
Rehabilitation of Health Work in United States. I. V. Hiscock, New Haven, Conn.—p. 609.

Pneumonia Following Aspiration of Oil.—Grayzel and DuMortier report two cases of pneumonia in children following the aspiration of oil or fat. Pinkerton studied the lesions produced experimentally in animals by intratracheal injections of various oils of animal, vegetable or mineral origin, and found that the resulting lesions varied with the type of oil used. The animal and mineral oils called forth a marked proliferative response on the part of the tissue, whereas practically no response resulted from the intratracheal injection of vegetable oils.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 153-192 (July 28) 1934

Climate and Health. S. W. Smith.—p. 153.
Focal Infection as Problem for the Laryngologist. A. J. M. Wright.—p. 158.
Electrotherapy in Treatment of Diseases of Genito-Urinary System. W. J. Turrell.—p. 160.
*Nonspecific Colitis in Relation to Deficiency Disorders and Anemia. Dorothy C. Hare.—p. 162.
Late Tendon Suture. E. I. Lloyd.—p. 165.
*Second Attack of Acute Poliomyelitis. T. Moore.—p. 166.

Nonspecific Colitis and Deficiency Disorders.—Hare points out the resemblances of colitis to a deficiency disorder and urges treatment with high vitamin diets and massive doses of iron or liver. The temporary increase in diarrhea or of other symptoms, which often follows at the outset, is no contraindication to continuing the treatment. Improvement in the intestinal symptoms may be slow, especially at the beginning of an acute relapse, and perseverance is required. It is urged that all local treatment and sigmoidoscopic examination should be avoided if possible, as the intestinal wall is highly susceptible to trauma. If colon lavage is continued, it may keep up the diarrhea and bleeding and cause apparent failure of other treatments.

Second Attack of Acute Poliomyelitis.—Moore reports a case of a second attack of acute poliomyelitis in which the observations indicate that the child had an attack of acute anterior poliomyelitis at an early age. This left him with some weakness of the lower limbs, but he was able to walk remarkably well in supports and lived as a normal boy until nearly 7 years of age. Then, following two rather indefinite febrile illnesses, the muscular weakness became much more widespread. The weakness of the lower limbs increased in severity, and the hands and recti abdominis were affected in addition. In consequence the child was left in a helpless condition. While he has been in the hospital the condition of the limbs has not improved, but the recti abdominis are recovering slowly. The author believes that the explanation of this observation leaves no doubt that a second attack of acute anterior poliomyelitis had occurred.

Edinburgh Medical Journal

41: 465-512 (Aug.) 1934

Constancy of Day-to-Day Leukocyte Blood Count: Medicostatistical Study. W. F. Harvey and T. D. Hamilton.—p. 465.
Problem of Stuttering: Present Position. G. Seth.—p. 497.

Indian Medical Gazette, Calcutta

69: 361-420 (July) 1934

Granuloma Genito-Inguinale. V. G. Nair and N. G. Pandalai.—p. 361.
Treatment of Infective Granuloma with Fuadin: Note. R. V. Rajam.—p. 372.
Carbarsone in Intestinal Amebiasis: Part II. R. N. Chopra and S. Sen.—p. 375.
Value of Sanocrysin Treatment in Pulmonary Tuberculosis. P. V. Benjamin.—p. 380.
Oleothorax. Y. G. Shrikhande.—p. 384.
Isospora Infection in Indian Cats. R. Knowles and B. M. Das Gupta.—p. 387.
Some Observations on Balantidium Coli and Endamoeba Histolytica of Macaques. R. Knowles and B. M. Das Gupta.—p. 390.

Irish Journal of Medical Science, Dublin

No. **103:** 289-330 (July) 1934

Vital Statistics of the Irish Free State, 1923-1932. L. S. Smith.—p. 289.
Amyloid Nephrosis, with Some Observations on Edema: Case. G. Bewley.—p. 299.
Report on Tuberculin Skin Tests in Children. Dorothy Price.—p. 302.
Interpretation of Chest Radiographs, with Particular Reference to Tuberculosis: Notes. T. G. Hardman.—p. 305.
Pharyngeal Hemorrhage: Revealed and Concealed. T. G. Wilson.—p. 307.
Gradenigo's Syndrome. T. O. Graham.—p. 309.
Otitic Brain Abscess. T. O. Graham.—p. 310.
Value of Intravenous Pyelogram in Treatment of Some Cases of Ureteral Stones: Note. T. J. D. Lane.—p. 312.
Dedifferentiated Tumor of the Ovary Associated with Continuous Vaginal Bleeding. D. J. Cannon.—p. 314.

Journal of Physiology, London

81: 409-480 (July 31) 1934

Choline and Dietary Production of Fatty Livers. C. H. Best, H. J. Channon and Jessie H. Ridout.—p. 409.
Action of Some Amines Related to Adrenalin, Methoxyphenyl-Methoxyethylamines. G. K. Elphick and J. A. Gunn.—p. 422.
Effects of Respiration on Venae Cavae of Certain Mammals, as Studied by Means of X-Ray Cinematography. K. J. Franklin and R. Janker. —p. 434.
Interpretation of Potential Waves in Cortex. E. D. Adrian and B. H. C. Matthews.—p. 440.
Formation of Corpus Luteum Is Dependent on Anterior Pituitary Lobe, and Not on the Maturing Ovum: Fertilized Ovum and Hormones. B. Zondek.—p. 472.

Lancet, London

2: 177-232 (July 28) 1934

Climate and Health. S. W. Smith.—p. 177.
Glandular Fever and Infectious Mononucleosis. H. L. Tidy.—p. 180.
*New Antigen of Bacillus Typhosus: Its Relation to Virulence and to Active and Passive Immunization. A. Felix and R. Margaret Pitt. —p. 186.
*Administration of Paraldehyde by Rectum as Preliminary to General Anesthesia. J. R. M. Whigham.—p. 191.
Intestinal Obstruction Caused by Impacted Gallstone: Diagnosis Before Operation. E. Rosenthal.—p. 192.
Stone in the Lower Urinary Tract in India: Examples of Multiple Calculi. R. C. Thomas.—p. 193.
Enterogenous Cyst of the Ileum in an Infant. A. L. d'Abreu.—p. 194.

New Antigen of Bacillus Typhosus.—Felix and Pitt state that the factor present in virulent strains of Bacillus typhosus and responsible for their virulence and inagglutinability is an antigen. This antigen is separate and distinct from the O and H antigens of B. typhosus and renders the O antigen resistant to the action of the O antibody. The authors suggest the symbol Vi (referring to virulence) for this antigen and the corresponding antibody. The Vi antibody is demonstrable by agglutination and absorption tests; its in vitro titer is comparatively low. Active and passive immunization disclose the powerful protective action of the Vi antibody. The O antibody, which is known to exert bactericidal and opsonizing effects, also neutralizes the endotoxin of B. typhosus, whereas the Vi and H antibodies are incapable of this action. The bearing of these facts on the theory and practice of antityphoid inoculation and of the serum therapy of typhoid is discussed.

Paraldehyde by Rectum as Preliminary to General Anesthesia.—Whigham, in using paraldehyde as a preliminary to general anesthesia, gives 1 drachm (4 cc.) of paraldehyde in 12 ounces (350 cc.) of saline solution for every 14 pounds of weight (6.4 Kg.). The solution is given at body temperature, slowly by the rectum from one and a half to two hours before operation. The patient lies on the left side with the buttocks slightly raised. The administration takes from thirty to forty minutes. In from twenty-five to forty-five minutes, the patient is sleeping. It has been the author's practice to continue anesthesia with gas and oxygen and, if necessary, a minimal amount of ether. When relaxation has been obtained, ether can usually be discontinued. Deetherization can be brought about at the end of the operation by the use of 5 or 10 per cent carbon dioxide-oxygen inhalations. The color of the patient is sometimes sallow after the paraldehyde has been given but improves quickly when gas and oxygen are administered and then usually remains good throughout the operation. On return to the ward the patient recovers consciousness in from one-half to two hours. A rectal washout is not necessary. Postanesthetic vomiting is slight or absent. Hiccups occur sometimes but are well controlled by the inhalation of 5 or 10 per cent carbon dioxide.

Medical Journal of Australia, Sydney

2: 1-36 (July 7) 1934

Radionecrosis: Clinical Study. R. K. Scott.—p. 1.
Pathologic Manifestations in Radionecrosis. R. D. Wright.—p. 8.
*Necrosis Following Radium Treatment: Preliminary Report. H. A. McCoy.—p. 14.
X-Ray Necrosis. E. H. Molesworth.—p. 16.

Necrosis Following Radium Treatment.—In an endeavor to estimate the factors that may contribute to the development of necrosis following radium treatment, McCoy studied the cases so affected. The factors appearing to contribute to the development of necrosis are unsuitable filtration and concentration, large tumors adjacent to or involving the bone or the cartilage, radium buried in or near infected tissue and unfavorable sites for interstitial treatment. The author cites cases in which these contributing elements have been fairly constant. It appears that 0.5 mm. of platinum should be the minimal filtration for the treatment of squamous cell epithelioma. In the treatment of lesions adjacent to or involving the bone, it is probable that an increase of filtration to 1 mm. of platinum would be desirable if interstitial treatment should be contemplated. A surface technic, in the form of molds, appears to possess advantages over interstitial methods in lesions involving the bone or the cartilage. An attempt should be made to eliminate infection before radium treatment is commenced. Concurrent syphilis should be treated before and during the progress of radium treatment. It appears that in certain lesions (particularly those involving the bone) necrosis is inevitable if radium treatment is to be effective in destroying the neoplasm.

Quarterly Journal of Medicine, Oxford

3: 293-522 (July) 1934

Calcinosis. W. D. W. Brooks.—p. 293.
Statistical Analysis of Three Hundred and Eighty-Nine Fractional Test Meals, with Especial Reference to Duodenal Regurgitation. N. F. Maclagan.—p. 321.
*Hematopoietic Activity of the Normal and Abnormal Human Liver, with Especial Reference to Pernicious Anemia. J. F. Wilkinson and L. Klein.—p. 341.
Alleged Pituitary Origin of Eclamptic and Preeclamptic "Toxemias" of Pregnancy. F. B. Byrom and C. Wilson.—p. 361.
Respiratory Exchange During Exercise in Heart Disease: III. M. Campbell.—p. 369.
Effects of Bodily Rest, Muscular Activity and Induced Pyrexia on Ventricular Rate in Complete Heart Block. A. R. Gilchrist.—p. 381.
Massive Atelectatic Bronchiectasis. W. P. Warner.—p. 401.
Treatment of Muscular Dystrophy with Glycine. D. P. Cuthbertson and T. K. Maclachan.—p. 411.
*Prolonged Residence in High Oxygen Atmospheres: Effects on Normal Individuals and on Patients with Chronic Cardiac and Pulmonary Insufficiency. D. W. Richards Jr. and A. L. Barach.—p. 437.
Lung Abscess, with Especial Reference to Causation and Treatment. J. Maxwell.—p. 467.

Hematopoietic Activity of Human Liver in Pernicious Anemia.—Wilkinson and Klein examined extracts of the liver from ten normal and abnormal human subjects for their hematopoietic potencies as judged by clinical trial in cases of pernicious anemia. The results show definitely that the antianemic "liver principle" is present in normal human liver and in treated cases of pernicious anemia in active remission but is absent from the liver in untreated cases of pernicious anemia. The liver from a patient with polycythemia rubra was found to be more potent than normal human or calf's liver. These results show that the liver acts as a storehouse for an antianemic factor (the "liver active principle"), which is produced in the stomach as a result of enzyme action between hematopoietin (the "stomach active principle") and an unknown constituent of a normal diet.

High Oxygen Atmospheres and Chronic Cardiac Insufficiency.—Richards and Barach observed two normal men and twenty-eight patients suffering from cardiac insufficiency who resided in atmospheres of from 40 to 50 per cent of oxygen for continuous periods ranging in length from five days to seven months. Studies have been made in these subjects of the effects of high oxygen atmospheres on circulatory and pulmonary functions and in certain instances on their water and electrolyte balances. The study showed that prolonged, continuous oxygen therapy will frequently restore to limited compensation a patient suffering from arteriosclerotic heart disease and insufficiency (not complicated by chronic nephritis), that it may increase the comfort and relieve dyspnea in a case of decompensated rheumatic heart failure and that it will usually relieve symptoms in chronic pulmonary fibrosis with cardiorespiratory failure and may, if sufficiently prolonged, restore such a person to limited ambulatory activity. The tissue oxygen deficit is probably the best criterion of the need for increased oxygen in the respired air. Arterial oxygen saturation is not a certain index of oxygen want, but, if the arterial oxygen saturation is depressed below normal, oxygen therapy is definitely indicated. Symptoms of oxygen want existing even when arterial oxygen saturation is within normal

limits may be relieved when the patient is placed in an atmosphere of 50 per cent oxygen. Arterial oxygen saturation in such cases usually rises to 97 per cent or more. Clinical cyanosis is a poor criterion of the degree of oxygen want. Marked arterial oxygen unsaturation may exist when clinically cyanosis appears slight. Conversely, deep cutaneous cyanosis may be present with normal arterial oxygen saturation and without general symptoms of oxygen want. In such cases, response to oxygen therapy may be poor. In chronic cardiac or pulmonary insufficiency dyspnea, restlessness, cardiac pain, arterial oxygen unsaturation, cyanosis and cough are the symptoms and signs, in the order of their importance, that establish the need for increased oxygen in the respired air. The two normal subjects, residing for a week in 45 per cent oxygen, showed a fall in pulse rate, a slight rise in the carbon dioxide blood levels, and no appreciable change in respiratory metabolism, in cardiac output or in the excretion of electrolytes or water.

South African Medical Journal, Cape Town

8: 473-508 (July 14) 1934

Erratic Worm Parasites in Man. H. O. Mönnig.—p. 475.
The Nervous Breakdown. M. J. Cohen.—p. 477.
Pathogenesis of Anemia. H. L. Heimann.—p. 479.
Modern Methods in Treatment of Sterility. C. Kark.—p. 483.
Home Treatment of Consumptives. S. S. Hewitt.—p. 484.
Observations from the Work of a Birth Control Clinic. I. J. Block.—p. 490.

Presse Médicale, Paris

42: 1169-1184 (July 21) 1934

*Contrast of Myxoleukocytic and Chlorhydropeptic Reactions of Stomach. M. Loeper and R. Fau.—p. 1169.
Antitetanic Vaccination. L. Bazy.—p. 1171.

Myxoleukocytic and Chlorhydropeptic Reactions of Stomach.—Loeper and Fau investigated the comparative mucoleukocytic stomach secretion and the peptic hydrochloride secretion. As a result of numerous examinations, they concluded that the normal empty stomach contains no mucus. The pathologic empty stomach contains mucus only when it is hypochlorhydric. Myxogenic foods are those which do not stimulate the hydrochloride secretion. Cancer of the stomach produces mucus, while ulcer does not produce it. The same antagonism exists between the simple hypochlorhydrias and the hyperchlorhydrias, the first being myxocitic and the second not. The antagonism is not so evident or constant in the different kinds of gastritis, and especially in alcoholic gastritis, doubtless because of the different stimulation of the elements of the lining. The presence or abundance of mucus in hyperchlorhydria or its absence in hypochlorhydria is a sign of diffuse gastric lesion, an inflammatory process rather than neoplasm or ulcer. Drugs stimulating the vagus decrease the secretion of mucus, as inhibitors of the vagus increase it. Gastric leukopedesis parallels the production of mucus and inversely the chlorhydropeptic secretion. Myxogenic foods and drugs can be used in case of heartburn and especially in hyperchlorhydric gastritis or ulcer. Atropine, which paralyzes the vagus, has simultaneously an antispasmodic, antichlorhydric, leukopedic and myxorrheic action, and this explains its quieting and reparative action in ulcer and hyperchlorhydria.

Progrès Médical, Paris

July 28, 1934 (No. 30) pp. 1201-1232

*Some Biologic Modifications in Gold-Fever Therapy of Psychoses: Their Prognostic Value. H. Claude, J. Dublineau and Kerfridin.—p. 1209.

Gold-Fever Therapy of Psychoses.—Claude and his collaborators describe the results of treating patients suffering from dementia praecox with injections of sulphur and gold. The technic involved the injection of sulphurated oil in progressively increasing doses of from 1 to 10 cc. at intervals of five or six days. In the intervals a soluble or insoluble gold salt was injected intravenously or intramuscularly in increasing doses, the total dose being generally about 0.15 or 0.16 Gm. of the metal. In cases responding unfavorably a second series of the same kind was employed after several weeks' rest. In a series of twenty cases treated in this manner, nine apparent remissions or cures were obtained. The febrile reaction varied, but an average moderate febrile reaction occurred following most of the injections. One of the most important biologic modifications was the variation in intensity of the flocculation with resorcinol. This appeared to be partly dependent on the degree of fever during the day of examination. In any case an elevated index seemed to be of favorable prognostic import. The erythrocyte sedimentation appeared to give curves generally paralleling the curve of flocculation. Fever therapy also caused a leukocytic reaction with neutrophilia, but this did not affect the general prognosis. There is some possibility of the treatment activating a local pleural or pulmonary tuberculosis, which must be considered both before and after the treatment; but even when this occurs it is usually not a serious complication.

Minerva Medica, Turin

2: 113-152 (July 28) 1934

Syndrome of Pseudoperitonitis in Purpura of Schönlein-Henoch. G. Zampa.—p. 119.
*Febricula and Thyroid Function. G. Macchioro.—p. 127.
Intratracheal Injections in Diagnosis and Therapy; Various Technics and Recent Transnasal Method. M. Mazzetti.—p. 136.

Febricula and Thyroid Function.—Macchioro states that slight attacks of fever, persisting for long periods and resisting all treatments, find their origin in a disharmony between the endocrine and the sympathetic systems and in increased thyroid function. These attacks of fever occur infrequently. In a large amount of clinical material the author found only five cases in which the lack of equilibrium was regarded as the causal factor of the thermic disturbance. It is difficult to decide whether slight fever during hyperthyreosis is due to increased thyroid function or to toxemia of incipient tuberculosis. Of nine patients presenting slight tuberculous manifestations and temperatures of approximately 37 C. (98.6 F.), five were given intravenous injections containing 5 cc. of a 2 per cent solution of sodium fluoride every other day. Five cases showed forms of glandular localization, while four showed parenchymal changes in the lung. The fever curve in all patients descended after treatment but never came to apyrexia. If sodium fluoride does not make the fever disappear, it demonstrates nevertheless to what degree the thyroid participates in its occurrence.

Policlinico, Rome

41: 445-504 (Aug. 1) 1934. Medical Section

Renal Syndrome in Hepatic Cirrhosis. A. Ferrannini.—p. 445.
Clinical Research on Hypoglycemic Action of Vegetal Secretin. D. Beggi and L. Dettori.—p. 463.
Autohemolysin Due to Cold in Dementia Paralytica. G. Rabboni.—p. 470.
*Parathyroids and Osteitis Fibrosa Cystica. L. Ficacci.—p. 489.

Parathyroids and Osteitis Fibrosa Cystica.—Ficacci describes three cases of recurrent polyarthritis presenting local lesions and multiple cysts the size of an average coin in the lower metaphyses. In a fourth case, of hypertrophic osteoarthritis with effusion into the knee joint and into the tibioastragalic articulations, the lesion, cystic in type, was found in the right internal malleolus. In one case the lesion gradually disappeared after several months of treatment. A biopsy made in one case showed the cystic reabsorption of the bone and the fibrous transformation of the marrow as in osteitis fibrosa cystica. The author found many zones of rarefaction in the intercondyloid regions of a patient having arthritis of the knee and many such zones in the fibula of a patient who had had typhoid a year before with foci of periostitis on the right tibia and on the first left middle phalanx. The diagnosis in this case was confirmed by the reaction of Widal and the isolation of the typhoid bacillus from the biopsy material of the focus of tibial periostitis. The calcemia remained normal in the first four cases, while it varied from 0.015 to 0.018 Gm. per hundred cubic centimeters of serum in the last two. An epiphyseal alteration of vacuolar aspect was present in two cases of hemophiliac arthropathy. The author maintains that in these cases this alteration is due to the fundamental lesion and that the parathyroids participate in the process only as secondary factors producing the changes in the calcium metabolism. He states that circumscribed fibrous osteitis must be distinguished from von Recklinghausen's disease, the result of primary hyperparathyroidism.

Riforma Medica, Naples

50: 679-716 (May 5) 1934

Left Strangulated Inguinal Hernia Containing Cecum with Inflamed Appendix and Loop of Colon. G. Montemartini.—p. 679.
*Behavior of Glycemia Due to Introduction of Duodenal or Gastric Tube. G. Cozzutti.—p. 684.
Cantani's Rapid Reaction in Serodiagnosis of Syphilis: Notes and Technical Observations. F. Cantani.—p. 695.

Behavior of Glycemia Due to Introduction of Stomach Tube.—Cozzutti describes changes in the glycemia occasioned by introducing any substance in fifteen patients suffering from various diseases. He found that the introduction of a duodenal catheter frequently lowers the glycemia and that the passage of a stomach tube likewise has the same effect and almost to the same degree. He interprets the phenomenon on the basis of the existence of a humoral reflex (secretin) in addition to the mechanical reflex (duodeno-insular). The author states that there is a close functional relation between the stomach and the pancreas; this relation involves not only the external secretion of the pancreas but its endocrine activity as well. The pancreas, in addition to the response to nervous stimuli, was found to react to gastric stimuli of a probable mechanical humoral type by both endocrine and exocrine functional response. The digestive tract is not only served by the external secretion of its accessory glands participating in the process of digestion but is likewise assisted by their endocrine activity. There is a close functional circulation between the insular pancreas and the digestive tube. The author has demonstrated the possibility of eliciting a pancreatico-insular response through a mechanical-humoral stimulus, and the influence of the gastric juice on the insulin confirms it. The acinous and insular pancreatic secretions are mutually dependent in their functional activity. In the pathology of the digestive tract the secondary changes in the external pancreatic secretion due to the absence or the abnormality of gastro-intestinal stimuli must be taken into consideration as well as those of the internal pancreatic secretion. In the pathology of the insular pancreas there is always a secondary alteration of the gastro-intestinal function.

Archivos de Medicina Cirugia y Espec., Madrid

37: 837-864 (Aug. 4) 1934

Treatment of Surgical Tuberculosis by Practical Method. F. P. Dueño.—p. 837.
Elimination of Iodine in Urine of Normal Individuals Given Iodide Salt. E. Carrasco Cadenas, F. Jiménez, A. Bootello and C. Alvarado.—p. 843.
*New Method of Treatment of Pulmonary Tuberculosis. L. Gironés.—p. 846.
Significance of Anomaly of Right Branch of Hepatic Artery in Biliary Surgery. R. Saldaña.—p. 847.
Hemorrhagic Purpura and Erythrodermia During Treatment with Gold Salts. A. Luelmo, F. Vizcaino and T. Casanueva.—p. 850.

Treatment of Pulmonary Tuberculosis.—Gironés obtained a partial immobilization of the left side of the thorax of a tuberculous patient by means of a plaster-of-paris cast provided with a large window over the healthy side. The patient had a history of a previous inflammatory condition and pulmonary adhesions accompanied by hemoptysis and severe diarrhea. Roentgen examination demonstrated a cavity, 6 by 3.8 cm., in the left upper lobe below the clavicle. The right lung appeared normal. The patient's condition did not improve during the first weeks of observation. The expectoration increased to 55 cc., while the erythrocyte sedimentation speed was high. Another roentgen examination showed the cavity to have increased to 6.8 by 4.5 cm. The author placed a plaster-of-paris cast over the thorax and after two days cut a large window on the right side. At the end of a month the expectoration was reduced to half its former amount and the erythrocyte sedimentation speed to 31 and the weight had increased 4½ pounds (2 Kg.). The cavity was reduced to 5.2 by 3 cm. and the left half of the thorax had retracted considerably. The pulmonary tissue in the region of the anterior aspect of the second rib showed marked retraction on the roentgenogram. Another cast was applied at a later date. The therapeutic result was satisfactory and warranted further application of casts to patients having unilateral and bilateral cavities in which pleural adhesions made pneumothorax impossible.

Deutsche Zeitschrift für Chirurgie, Berlin

243: 377-488 (June 30) 1934

*Inflammatory Tumors of Large Intestine of Nonspecific Nature. G. Anschütz.—p. 377.
*Isohemo-Agglutination Subgroups A_1 and A_2 and Their Practical Significance in Blood Transfusion. N. Blinov.—p. 400.
Operative Treatment of Dislocation of Patella. H. Strube.—p. 412.
Retention of Lymphocytes and Tissue Reaction in Experimental Stasis Edema. L. Löffler.—p. 420.
Injuries of the Elbow in Childhood: Epiphysiolysis of Proximal End of Radius, Its Origin and Treatment. R. R. Oppolzer.—p. 427.
Development, Status and Outlook in Operative Treatment of Scoliosis. E. Bergmann.—p. 439.
*Bile Peritonitis Without Visible Perforation. E. Melchior.—p. 458.
Contribution to the Knowledge of Loose Bodies in Elbow Joint. K. Kamniker.—p. 464.
Formation of Ketone Bodies Before and After Operation. H. Fuss and G. Degen.—p. 471.
Penetrating Injury of Heart and Infection with Fraenkel-Welch Bacillus. E. Just.—p. 478.

Nonspecific Inflammatory Tumors of Large Intestine.—The clinical picture of a nonspecific inflammatory tumor of the large intestine, according to Anschütz, falls into one of three groups: 1. Tumors operated on as real or specific tumors. 2. Cases considered appendicitis or appendiceal abscess. 3. Cases recognized from history and clinical behavior as nonspecific inflammatory tumors. Their gross appearance at operation resembles closely that of carcinoma or tuberculosis. Microscopic studies reveal the typical picture of a chronic inflammatory process. Among the etiologic factors one must consider foreign bodies, circulatory disturbances, parasites, appendicitis, diverticulitis, all forms of colitis, typhus and dysentery. The particular pathogenesis is due to an attenuated infection on the one hand, and an impaired local resistance on the other. In the diagnosis one must always think of the possibility of carcinoma. The treatment should always be radical, with particular regard for the inflammatory nature of the process.

Significance for Blood Transfusion of Isohemo-Agglutination Subgroups A_1 and A_2.—In his study of determination of blood groups Blinov found that factor A does not represent a definitely separate group but that it may exist in two variants designated by A_1 and A_2. As a result, each of the groups A and AB is divided into two subgroups: A_1 and A_2, A_1B and A_2B. These groups are recognized qualitatively through definite serologic characteristics. The difference in the properties of these subgroups explains the so-called exceptions in the classic four-group scheme and the transitions of one group into another as described by various authors. In the author's experience A_1 is three times as frequent as A_2, while A_1B is about as frequent as A_2B. A_1 and A_2 are hereditary characteristics. They are transmitted to the offspring according to the mendelian law, A_1 being the dominant and A_2 the recessive factor. This fact may be of considerable value in medico-legal questions. In the preparation of the standard serum of group A, one should use the blood of only the subgroup A_1. The standard erythrocytes must likewise be taken from the subgroup A_1. There were no cases of death in the author's material from the use of incompatible subgroups, although severe reactions were observed.

Bile Peritonitis Without Visible Perforation.—The finding at the time of operation of bile in the peritoneal cavity without a visible perforation of the gallbladder or the bile tracts suggests, according to Melchior, three possibilities: 1. Actual absence of a perforation. 2. A perforation that has taken place but became sealed and could not be detected as such. 3. An existing perforation not noticed because of the difficulty of exposure, its true character being revealed, as a rule, at necropsy. A distinction, therefore, must be made between the clinical concept of bile peritonitis without visible perforation and its narrower anatomopathologic concept. To the latter group belong the cases that are the result of a simultaneous effect of an infection and stasis of the walls of the gallbladder and of the biliary tracts. Under such conditions the bile may diffuse through the gallbladder wall without the existence of an actual perforation. There is clinical and experimental proof that regurgitation of the pancreatic secretion into the bile tract may likewise bring about an abnormal transfusion of bile. Under certain pathologic conditions, such as obstruction of the cystic or the common duct and acute inflammation

of the wall of the gallbladder, the latter was seen by the author and other surgeons to "sweat" bile. A laparotomy sponge applied to the wall of the gallbladder with moderate pressure becomes tinged with bile. The author reports two cases in both of which there was found at operation a severe bile peritonitis without visible perforation. Both were instances of chronic choledocholithiasis with acutely supervening partial necrosis of the liver. Transfusion of bile took place from massive foci of liver necrosis. The author believes that, besides the element of infection, the toxic effect of free bile within the peritoneal cavity plays an important part in the fatal outcome. This toxic effect is due to the rapid absorption of the bile salts, which are toxic for the organism. They become bound up with the red cells and with the muscle cells, among others those of the heart. In the presence of a considerable effusion, lethal concentration may be reached in twenty-four hours. The clinical picture of cholemic poisoning is characterized by pronounced adynamia, cardiac weakness and vasomotor paralysis.

Medizinische Klinik, Berlin

30: 953-984 (July 20) 1934. Partial Index

Local Anesthesia. F. O. Mayer.—p. 953.
Morphinism. O. Wuth.—p. 956.
*Two Little Known Forms of Gastritis: Membranous Gastritis and Aphthous Gastritis. R. Korbsch.—p. 965.
Syphilis of Hypophysis: Case. F. Winkler.—p. 967.
Almost Total Pyloric Stenosis in a Girl, Aged 15. J. Becker.—p. 968.
*Oral Bismuth Poisoning. S. Serefis.—p. 968.

Two Forms of Gastritis.—Korbsch describes a case of membranous and a case of aphthous gastritis. Both had ulcer-like aspects, the membranous gastritis presenting the symptoms of a duodenal ulcer, the aphthous gastritis those of a ventricular ulcer. In the first case gastroscopy revealed an inflamed, red mucous membrane that was strewn with glistening white crystal shaped formations of mucus. Following irrigation treatment, most of the exudations of white mucus disappeared, but they persisted in the region of Waldeyer's stomach tract and became flatter and membrane-like. In the patient with aphthous gastritis, gastroscopy revealed in the lower portion of the body of the stomach a large number of lentil-sized, aphthous tumors, most of which were circular, oval or bean shaped. Some appeared slightly lacerated. In the region of the cardiac sphincter there were small erosions. Ten days later a control gastroscopy after irrigation treatment disclosed in the region of the angle several already deepened ulcers, the size of pepper grains. The formerly observed ulcers on the posterior wall had largely disappeared. Because of the danger of a niche forming ulcer, feeding with the jejunal tube was instituted. But a new gastroscopy several weeks later revealed a new exacerbation of the aphthous gastritis, in that a large number of small erosions covered the reddened mucous membrane, particularly around the cardiac sphincter. The author states that he observed such aphthoid ulcers also in several other patients. They sometimes persisted for months and even led to niche formation. However, these ulcers with rather large niches as a rule yield within a comparatively short time to treatment with the jejunal tube or even to a simple milk gruel diet and rest in bed. Intramuscular injections of blood and other measures are helpful. Why these hemorrhagic erosions, which are probably also responsible for the majority of gastric hemorrhages, occur only in some of the gastritides is a histologic problem, the solution of which has been begun by O. Müller's capillaroscopic studies.

Oral Bismuth Poisoning.—A review of the literature convinced Serefis that opinions differ widely about the mechanism of oral bismuth poisoning. Many investigators nevertheless agree that a strong acid reaction of the gastric juice is essential. Some believe that an excess of lactic acid is necessary, while others consider an increased hydrochloric acid content essential. The author based his own tests on the intestinal resorption of bismuth on the assumption that probably only the bismuth salts that are in solution become absorbed. Accordingly he investigated the requirements for the solubility of bismuth in the gastro-intestinal tract and studied the behavior of bismuth subnitrate in contact with the acids of the gastric juice in vitro as well as in the animal experiment. Tests with hydrochloric acid and with lactic acid revealed that the presence of lactic acid is a promoting factor, but not an absolutely essential one in the solution of bismuth in the stomach. Other test tube experiments revealed that bismuth subnitrate is changed into bismuth chloride not only by free hydrochloric acid but also by the chlorides of the mineral salts, such as sodium chloride. Since the latter is taken in with the food, bismuth chloride can be formed even in the absence of hydrochloric acid. For the resorption of bismuth chloride it is important that it have a tendency to form complex compounds, such as with organic acids and their salts, with polyvalent alcohols and with various types of sugar. If, for instance, sodium citrate or sodium lactate is added to the acid bismuth chloride solution, it is possible to dilute this solution greatly without precipitation taking place. If in addition to that a polyvalent alcohol or a sugar is added, the solution can be rendered alkaline without causing precipitation. The bismuth reaches the small intestine in the compound form, and here resorption takes place. After discussing factors that play a part in the resorption in the small intestine, the author states that his test tube experiments were corroborated by animal experiments. He concludes that, since the resorption requirements of orally administered bismuth are now known, there remains only the problem of the correct dosage to permit the oral bismuth therapy of syphilis. His studies on the dosage problem will be reported soon.

Zentralblatt für Chirurgie, Leipzig

61: 1681-1744 (July 21) 1934

Arterial Spasms in An Acute Massive Thrombosis of Femoral Vein. A. Läwen.—p. 1681.
*Cod Liver Oil Salve Treatment of Fresh Wounds, Burns and Phlegmonous Wounds. W. Löhr.—p. 1686.
Experiences with Cod Liver Oil Salve Dressings With and Without a Cast in Certain Surgical Disorders. W. Zuelzer.—p. 1695.
Peculiar Course of Left Recurrent Nerve. G. Hromada.—p. 1699.
Gastric Lipoma and Peptic Ulcer. E. Melchior.—p. 1701.
Clinical and Experimental Spinal Anesthesia: Two Hundred and Fifty Cases of Nupercaine Spinal Anesthesia after Jones. H. Franken.—p. 1703.
Operative Treatment of Comminuted Fractures of Distal End of Humerus. F. Felsenreich.—p. 1713.
Method of Hand Grasp in Anesthesia: Remarks on Evipan Sodium Anesthesia in Tropics. N. Grzywa.—p. 1720.
Injury of Heart: Two Cases. F. F. Von Remetei.—p. 1723.
Technic of Ambulatory Plaster-of-Paris Cast. W. Thomsen.—p. 1726.
New Method of Epididymectomy. S. Heinatz.—p. 1729.
Extirpation of a Duodenal Myoma. S. Kondo.—p. 1732.

Cod Liver Oil Salve Treatment of Fresh Wounds and Burns.—In a bacteriologic study of various fats and oils, Löhr found that they are usually bacteria free even when not sterilized. Bacteria ordinarily encountered in infected wounds, streptococci, staphylococci and Bacillus coli, perish when introduced into cod liver oil. It has not been determined whether they die because the cod liver oil contains no nourishment for them or because of the surface tension of the oil. It was further demonstrated that large amounts of the cod liver oil used in the treatment of extensive wounds did not cause toxic manifestations of any kind. The oil was used in combination with indifferent substances to give it the consistency of a paste. The oil in this salve permeates the tissues and causes a rapid liquefaction of the necrotic tissues, followed by a powerful stimulation of the growth, which affects all tissues, including the epithelium. Large areas fill with granulation tissue and these become covered with regenerated epithelium. The author did not resort once to skin transplantation during the last three and one-half years in which he has used this form of treatment. The inhibiting effect on the bacterial flora of wounds was likewise striking. The technic of treatment of fresh industrial wounds consists of the usual toilet of the wound with omission of suturing. A thick layer of the cod liver oil salve is laid on the wound surfaces and in the case of an extremity a plaster-of-paris cast is applied over it. The cast is removed at the end of fourteen days and the lesion is usually found to be healed. This treatment is not applicable to wounds badly soiled with earth or highly infected, to panaritia or to gas bacillus infections. Such wounds are treated by excision and application of disinfecting agents. The cod liver oil treatment is resorted to only after the infection has been overcome in order to obtain good regeneration. On the other hand, the treatment finds its application in chronic wounds, even if infected. Its effect is particularly striking in burns. The author has treated with this method 122 cases of second and

third degree burns. The treatment was no more effective in preventing the early fatalities of burns than any other method. However, the late fatalities due to secondary infection were markedly reduced, more so than with the tannic acid method, because it is applicable in difficult localizations, such as the face, the buttocks and the anus. The regenerative effect on the epithelium was seen most strikingly in burns. Thus the author observed epithelization of an area of third degree burn 45 cm. square. The change of dressings is not painful, because the salve is removed in thick layers leaving the new granulation tissue intact. The author is of the opinion that the effects enumerated are due to the vitamin A and D content of the cod liver oil.

61: 1793-1856 (Aug. 4) 1934. Partial Index

Significance of Intracranial Pressure in Question of Blood Vessel Distribution as Determined in Arteriographs. W. Löhr and W. Jacobi.—p. 1793.
*Effect of Cod Liver Oil and of Cod Liver Oil Salve on Pyogenic Bacteria. W. Löhr and K. Treusch.—p. 1807.
Treatment of Poorly Healing Ulcerating Stumps with Large Tissue Defects By Cod Liver Oil and Plaster-of-Paris Casts. W. Löhr.—p. 1815.
Intravenous Urography and Pelvirenal Reflux. A. Hendriock.—p. 1822.
Contribution to Pathogenesis of Diabetes Insipidus. W. Krieg.—p. 1827.

Effect of Cod Liver Oil on Pyogenic Bacteria.—Löhr and Treusch point out that theoretically it would be better to use the natural cod liver oil in the treatment of wounds, because that would bring the greatest possible amount of vitamins A and D in direct content with the wound tissues, constituting a parenteral vitamin therapy. Bacteriologic tests proved that cod liver oil is free from bacteria and that organisms introduced into it perish. This is true for the ordinary pyogenic bacteria and for Bacillus tuberculosis. However, the use of pure cod liver oil in bone cavities and other situations is not advantageous because it dries rapidly and because a good deal of it is lost. It was therefore necessary to combine it with some inert substance that would not affect the rather sensitive vitamins A and D. The authors found petrolatum suitable for the purpose. As a result of their extensive clinical experience with cod liver oil salve and of their bacteriologic studies they conclude that cod liver oil therapy has a definite curative effect. The treatment should be looked on as a means of increasing the defense powers of the tissues. The addition of petrolatum reduces the bactericidal power of cod liver oil and calls for a careful examination of it as regards its sterility.

Zentralblatt für Gynäkologie, Leipzig

58: 1681-1744 (July 21) 1934. Partial Index

Menstruation in Castrated Woman Following Treatment with Ovarian Hormone. P. N. Damm.—p. 1682.
Irregular Birth in Dorso-Anterior Frontal Presentation. E. Coester.—p. 1687.
*Aspects of Local Argyrosis of Vaginal Portion of Uterine Cervix and of Cervical Polyps. H. Dworzak.—p. 1691.
Congenital Tumor of Dental Lamina and Absence of Palate: Case. B. Szendi.—p. 1697.

Local Argyrosis of Uterine Cervix.—Dworzak states that general argyrosis is today a rare disorder because of greater precaution in the therapeutic application of the silver salts. However, local argyrosis resulting from the application of silver solutions is still a comparatively frequent occurrence. The dermatologist is familiar with the condition, but, if the literature is any indication, the gynecologist has not given it attention. Since silver solutions are employed by the gynecologist, the occasional occurrence of a local argyrosis of the vagina and the cervix seems likely. The author relates the clinical history of a woman, aged 39, whose cervix had been repeatedly treated with silver solutions. The later removal of a cervical polyp revealed a dark brown pigmentation. The pigment gave no iron reaction, but other tests revealed that the pigmentation consisted of silver. This observation induced the author to investigate the problem further. He found brownish pigmentations on the vaginal mucous membrane of a number of women whose cervix had been treated with silver solutions. After citing several experiments, he compares the genuine melanin pigmentations that have been observed on the cervix and the cervical polyps with the dark pigmentations caused by deposits of silver in the tissues. He emphasizes that the silver granules are found primarily in the intercellular spaces, rarely within the cells, while in case of melanotic pigmentation the pigment is within the cells, and the intercellular spaces are free from it. The differentiation of silver and melanotic pigment is possible also by means of histochemical methods.

Sovetskaya Vrachebnaya Gazeta, Leningrad

June 30, 1934 (No. 12) pp. 889-968. Partial Index

Genesis and Treatment of Enuresis in Children. M. I. Iogikhes.—p. 889.
Question of Neurotrophic Character of Diabetes. Y. A. Lovtskiy, L. S. Shwarts and M. N. Egorov.—p. 894.
Pyloric Stenosis in Nurslings. S. V. Bogorad and N. M. Ostrovskiy.—p. 898.
Clinical Standardization of Digitalis. D. M. Rappoport and L. S. Shwarts.—p. 904.
Action of Camphorated Oil Extracted from Ocimium Cannum One Year Old: Clinical Studies. D. M. Rappoport.—p. 906.
*Functional Diagnosis of Diseases of Pancreas by Determination of Lipase and Amylase Content of Blood. A. A. Zelikson.—p. 908.

Functional Diagnosis of Diseases of the Pancreas.—Zelikson found in a study of thirty-five cases that determination of ferments obtained with the aid of the Einhorn duodenal tube is entirely unreliable. Determination of amylase in the urine in thirty-three cases likewise proved to be of little diagnostic value. The author examined the lipase and amylase blood content in ninety-two cases. Determination of blood lipase after the method of Rhon depends on the fact that in patients with pancreatic disease the atoxyl fails to activate the lipase, while in the normal organism its effect is to activate the ferment. The reliability of the Rhon test for lipase and of the Wohlgemuth test for the amylase was verified in thirty-three cases either at an operation or at necropsy. In a group of eight cases with proved pancreatic lesions there were four instances of a negative Rhon test. The study of blood amylase led the author to believe that the latter reflects not so much the condition of the pancreatic function as the patient's general fermentative ability. The author concludes that the reaction of Rhon is comparatively of the greatest value in functional diagnosis of pancreatic disease, particularly in the early stages. The reaction may be negative even in extensive involvement of the organ shortly before death. It may be negative in cystic disease of the pancreas. In view of the simplicity of the technic and apparatus, the author feels that the test should be made a part of the general clinical routine. The test should be applied not only in suspected cases of primary pancreatic lesion but also in cases in which the pancreas may be secondarily involved. Determination of blood amylase is of significance only in the presence of a positive Rhon test.

Varachebnoe Delo, Kharkov

16: 146-239 (No. 3) 1934. Partial Index

Psychology in Medical System of Education. M. S. Lebedinskiy.—p. 145.
Neurosomatic and Psychosomatic Relationships in Neuroses. Y. A. Ratner.—p. 151.
Vegetative Nervous System and Psychoses. V. V. Brailovskiy and V. B. Shostakovich.—p. 155.
Somatopsychic Relationships in Syndrome of Causalgia. M. T. Astvatsaturov.—p. 161.
Hemialgesic Phenomenon and Its Clinicobiologic Significance. G. D. Leshckenko.—p. 167.
Vasosensory Spinal Cerebral Paths. Z. T. Geymanovich.—p. 169.
*Surgical Treatment of Pain. A. L. Polenov and T. S. Babchin.—p. 177.

Surgical Treatment of Pain.—Polenov and Babchin report forty cases in which chordotomy was performed for intractable pain of inoperable cancer or for meningoradiculitis and in which they have obtained either a complete alleviation of pain or at least a marked diminution. The advantages of the operation are that: 1. It is capable of producing anesthesia of a large area, insignificant traumatism consisting of a laminectomy of only two vertebrae and of an incision into the spinal cord for a depth of 3 mm. 2. It destroys pain and temperature sense but leaves undisturbed all forms of deep sensibility, muscle tone and function, reflexes and trophic influences. 3. It is applicable to the lesions of the spinal cord itself. A bilateral chordotomy is justified for the relief of pain in a bilateral lesion. Among the disadvantages the authors point out the possibility of injury to the pyramidal tract with paresis of the lower extremity and recurrence of pain due to insufficient sectioning. Among the general causes of failure to relieve pain by the surgical methods the authors stress insufficient knowledge of the pathways of pains and their individual variations in peripheral

nerves and in the spinal cord; mistakes in operative technic, such as the choice of the wrong place or level or incomplete interruption; the individual regenerative power of the peripheral nerves, and the existence of collateral innervation.

Bibliotek for Læger, Copenhagen

126: 273-326 (July) 1934

*Chronic Peritonitis Incapsulans (Lübimow): C'cn. S. Hindse-Nielsen.—p. 273.

Experimental Investigations on Problems Regarding Sexual Hormones with Especial Regard to Feminizing Substances. H. Seemann.—p. 310.

Studies on Relation of Simple Glaucoma to Internal Secretion. V. Larsen.—p. 318.

Chronic Peritonitis Incapsulans.—Hindse-Nielsen presents the case of a girl, aged 15, of tuberculous family, who for seven or eight months had periodic attacks of ileus, which always yielded to atropine. Laparotomy, done under the diagnosis of probable mesenteric cyst, revealed a peritonitis incapsulans containing about 1 meter of ileum. Ileocecal resection was done; the patient has been followed for three years and continues well. The author reviews peritonitis incapsulans on the basis of fifty cases from the literature. He says that it occurs most often in the second and third decades of life, in which the proportion between men and women is 9.3:14.2; in the entire material the proportion is 20:30. He regards the disorder as clinically and pathophysiologically a substrate for several different disorders: it is a localized, adhesive, fibrohyaline or fibrous peritonitis, which represents an organized remnant exudate after a diffuse peritonitis has originated about a focus in the intestine or mesentery, or is a link in a more diffuse, chronic serositis. Etiologically the disorder is related to specific infections (tuberculosis, syphilis) and nonspecific infections (pneumococcic infections) and also to traumas and cancer. The symptoms are constipation, pain, recurring subileus and palpable abdominal tumor. Treatment consists in laparotomy, with discission or extirpation of the capsule, otherwise anastomosis around the pseudocyst or resection, if it is evident that enough intestine will be left. In cases in which for some reason removal of the capsule is not attempted or has been abandoned, roentgen treatment may be tried. Atropine is recommended in attacks of pain.

Hospitalstidende, Copenhagen

77: 793-820 (July 3) 1934

Has Mammalian Organism in Recent Years Lost Its Ability by Nonspecific Action to Increase Its Defense Against Toxin Poisoning and Attack of Pathogenic Microbes? L. E. Walbum.—p. 793.

*Investigations on Influence of Hormone of Posterior Lobe of Pituitary Body on Urea Clearance. T. Bjering.—p. 808.

Influence of Hormone of Posterior Pituitary on Urea Clearance.—Bjering states that after the injection of this hormone the creatinine and the urea clearance were reduced, the urea clearance relatively more, both in patients with sound kidneys and in those having nephritis, but especially in the former. The hormone decreases the filtration of urea and promotes resorption back into the tubuli. This increased resorption occurs independent of changes in the creatinine concentration index, and the ability of the tubuli actively to resorb is assumed to be changed after injection of the hormone.

Ugeskrift for Læger, Copenhagen

96: 759-822 (July 19) 1934

*Clinical and Serotherapeutic Studies on Preparalytic Stage of Poliomyelitis on Basis of Experiences During Epidemic in Skiveegnen in 1933. S. Baastrup.—p. 759.

Remarks on Diagnosis of Infantile Paralysis. P. V. Tuxen.—p. 778.

*Poliomyelitis: Review of Cases Observed at Blegdam Hospital and Contribution to Recognition of Aparalytic Picture of Poliomyelitis. N. I. Nissen.—p. 781.

*Observations from Infantile Paralysis Epidemic in Sukkertoppen, Greenland. K. Hrolv.—p. 804.

Experiences from Infantile Paralysis Epidemic in Godthaab, South Greenland. K. V. Christensen.—p. 814.

Application of Respirator in Acute Anterior Poliomyelitis. F. Wulff.—p. 814.

Distribution and Application of Poliomyelitis Convalescent Serum (P. C. S.). State Serum Institute.—p. 817.

Studies on Preparalytic Stage of Poliomyelitis.—Of Baastrup's 120 cases, 105 (87 per cent) presented pathologic spinal fluid, ninety-one (76 per cent) increased globulin, eighty (67 per cent) pleocytosis and sixty (50 per cent) increased albumin. Meningeal symptoms were present in all cases. He asserts that for the clinical diagnosis of preparalytic poliomyelitis the presence of three cardinal symptoms is necessary: spinal stiffness with pain on bending forward, typical appearance and fever, spinal rigidity being the most decisive. With regard to the differential diagnosis, the meningeal symptoms are the exception in influenza, while they are the rule without exception in preparalytic poliomyelitis. In cases of preparalytic poliomyelitis showing stiffness of the neck and milder positive Kernig-Brudzinski symptoms, and especially in the rare cases showing, in addition, somewhat dulled sensory apparatus and suggestion of spasms, clinical differentiation between encephalitis and preparalytic poliomyelitis is hardly possible on a single examination; immediate clinical differential diagnosis between preparalytic poliomyelitis and tuberculous meningitis may also be impossible if tubercle bacilli in the spinal fluid or certain tuberculous manifestations elsewhere cannot be established. In these cases the author advises the administration of convalescent serum on suspicion, if sufficient serum is available. Human convalescent serum was given in twenty-two cases: in five cases of the paralytic stage, because of the grave general condition, and in seventeen moderately grave or grave cases of the preparalytic stage. The serum had no prohibitive effect in the three preparalytic cases in which tremor, ataxia and patellar reflexes were already present on administration, showing insult to the spinal cord; the other fourteen cases remained aparalytic. Marked improvement of the general condition was seen in sixteen cases. Administration of convalescent serum is advised only in the preparalytic stage, preferably at the beginning of the first twenty-four hours, and only when there are no symptoms of the spinal cord, intravenously (intramuscularly if intravenous injection is unsuccessful), in a single large dose, the minimum dosage being approximately from 20 to 30 cc. for children about 1 year old and increasing according to age and weight to from 50 to 70 cc. for adults.

Recognition of Aparalytic Cases of Poliomyelitis.—Nissen classifies poliomyelitis into three forms, the fulminating, the cases with slow course and accentuation of the symptoms until paresis occurs, including the cases with diphasic course, and the meningeal aparalytic form, with or without slight disturbances of reflex. He tabulates his cases: thirty-three paralytic and twenty-one aparalytic, from the summer of 1933 to the spring of 1934. The aparalytic cases were diagnosed as poliomyelitis on the basis of simultaneous occurrence of paralysis cases, occurrence of aparalytic and paralytic cases among brothers and sisters, assumed contact infection, and results of examination of spinal fluid and other laboratory investigations. While the paralytic cases mainly appeared in the first four years of life, the aparalytic cases dominated in the school age.

Infantile Paralysis Epidemic in Sukkertoppen, Greenland.—Hrolv reports eighty-three manifest cases and a large number of abortive cases of acute anterior poliomyelitis of an epidemic in the summer of 1932. He concludes that immunity is conferred on all who have had the disease, including abortive cases; no one living during the epidemic of 1914 was affected in 1932. There is violent and rapid spread of the disease, causing high morbidity, mostly abortive, and epidemics of short duration. The virus lives for years, leading to epidemics when favorable conditions arise, perhaps with increase of virulence on repeated transplantation from person to person. The danger of infection from manifest patients is slight. The infection spreads from well carriers, from the abortive cases and from patients in the incubation stage, presumably by droplet infection. The incubation period varies from one to from fourteen to twenty days. In the main, the shorter the incubation period, the graver the disorder, and the longer the incubation period, the milder the disorder. Infantile paralysis is also endemic in South Greenland.

CORRECTION

Transverse Fractures of Neck of Radius.—In the abstract of the article by Patterson in THE JOURNAL, September 1, page 713, the first line should read "Patterson describes a closed method of reduction" instead of "operative removal."